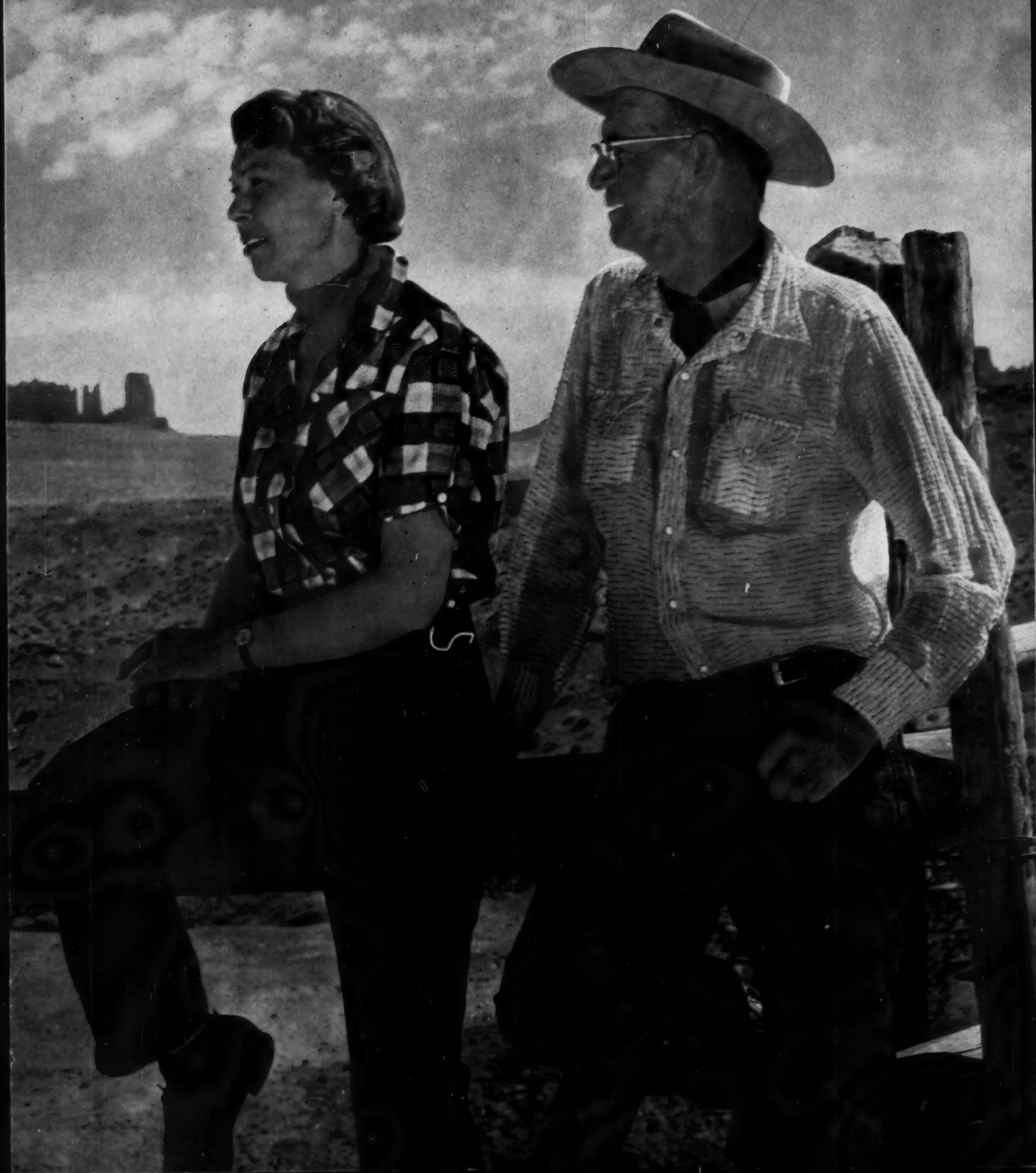


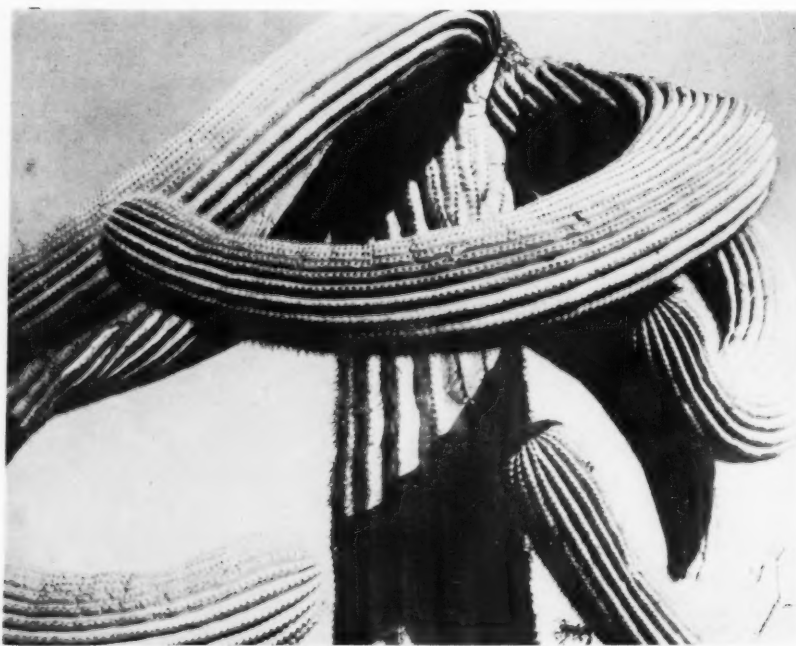
Desert

AUGUST, 1957 35 Cents





PICTURES OF THE MONTH



Burro Prospector . . .

"This old prospector was camped out in the Verde River country near Quartz Mountain, north of Phoenix, and it looked as if there was going to be a beautiful sunset so I asked him if he would pack up his outfit and pose with his burro for a picture. This is the result." That is how R. T. Payne of Pinetop, Arizona, describes the taking of this month's first prize winning photo. Camera data: 4x5 Bush Press Camera; pancro press type B film with red filter; 1/25 sec. at f. 22.

"Octopus" Saguaro . . .

The twisted arms of this Saguaro cactus growing north of Scottsdale, Arizona, reminded Ryan O'Brien of Phoenix of an octopus, and he recorded the impression on film—this month's second prize winner. O'Brien shot the picture on Panatomic X film with light yellow filter, 1/25 sec. at f. 14.

DESERT CALENDAR

August 1-3—Burro Race, Apple Valley to Big Bear Lake, California.
 August 2—Old Pecos Dance, Jemez Pueblo, New Mexico.
 August 2-4—Rough Riders and Cowboys' Reunion, Las Vegas, N.M.
 August 3—Smoki Dances, Prescott, Arizona. (See page 11).
 August 3-4—Billy the Kid Pageant, Lincoln, New Mexico.
 August 3-4—Horse Show and Gymkhana, Pine Valley, California.
 August 3-September 15—Hubbell Collection (Indian Portraits), Museum of Northern Arizona, Flagstaff.
 August 4—Corn Dance, Santo Domingo Pueblo, New Mexico.
 August 7-10—Harvest Days, Midvale, Utah.
 August 8-10—Black Diamond Stampede, Price, Utah.
 August 8-11—Inter-Tribal Indian Ceremonial, Gallup, New Mexico (See back cover).
 August 9-10—Northern Arizona Square Dance Festival, Flagstaff.
 August 10—Western Saddle Club Gymkhana, Phoenix.
 August 10—Fiesta de San Lorenzo, Picuris, Laguna and Acoma pueblos, New Mexico.
 August 10-11—State Championship Cutting Horse Contest, Santa Rosa, New Mexico.
 August 12—Annual Fiesta and Corn Dance, Santa Clara Pueblo, N.M.
 August 13-15—72nd Annual Rodeo, Payson, Arizona.
 August 14-17—V-J Day Rodeo, Artesia, New Mexico.
 August 15—Assumption Day Fiesta and Corn Dance, Zia Pueblo, N.M.
 August 15-17—County Fair and Rodeo, Logan, Utah.
 August 16-18—Horse Show, Santa Fe.
 August 17—Barber Shop Quartet Association Harmony Jamboree, Prescott, Arizona.
 August 17-25—Pony Express Days and Nevada Fair of Industry, Ely.
 August 18—Tour to Gran Quivira, from Alamogordo, New Mexico.
 August 22-24—Annual Fiesta, Holbrook, Arizona.
 August 24—South Phoenix, Arizona, Riding Club Gymkhana.
 August 24—Becker Lake Regatta, Springerville, Arizona.
 August 28—San Augustin Fiesta and Dance, Isleta Pueblo, New Mexico.
 August 29-30—County Fair, Duchesne, Utah.
 August 30-September 2—Annual Fiesta, Santa Fe.
 August 30-September 2—County Fair, Elko, Nevada.
 August 31-September 2—Mohave County Fair and Elks Rodeo, Kingman, Arizona.
 August 31-September 2—Kids' Rodeo, Cloudcroft, New Mexico.
 August 31-September 2—Nevada Rodeo, Winnemucca.
 August 31-September 2—Rodeo, Fallon, Nevada.
 Late August—Hopi Snake Dances at Walpi and Mishongnovi, Arizona. (See page 29.)



Volume 20

AUGUST, 1957

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Full Moon arch, one of more than 30 natural windows found in the Mystery Valley sector of Monument Valley.

With Harry Goulding in Mystery Valley...

Perhaps the way is now open for Monument Valley in northern Arizona and southern Utah to become a national park—a Navajo National Park. Anyway, that is the dream of Harry and Mike Goulding who have lived with the Indians in this remote sector of the Navajo reservation for more than 30 years. This story will give a glimpse of some of the fantastic formations and prehistoric ruins which are found in this region—and of the descendants of Chief Hoskaninni and the little band of rebels who fled to this arid land in the early '60s.

By RANDALL HENDERSON
Map by Norton Allen

FOR MANY years it has been the dream of Harry Goulding that the colorful buttes and domes, and the golden sands of Monument Valley astride the Arizona-Utah border, would become a national park.

Many of those who have visited Monument Valley share Goulding's feeling that this land of fantastic stone formations, prehistoric Indian ruins, and primitive Americans would easily qualify for national park status. But there were obstacles, the most serious of which is that Monument Valley is almost entirely within the reservation of the Navajo Indians—a reservation established by a treaty which forbids the disposal of any Indian land without the consent of the tribal owners.

Perhaps the Indians themselves have

a solution for this difficulty. In 1934 the Navajo Tribal Council passed a resolution providing "... that all areas of scenic beauty and scientific interest which require preservation be hereby reserved as Navajo Parks, Monuments or Ruins, to be managed by the Navajos themselves with the cooperation of the Indian Service, and other helpful agencies ..."

At the time the resolution was passed, the Indians had no funds with which to undertake so far-reaching a program. More recently, with the tribal treasury enriched by \$33,000,000 in oil and mining leases and royalties, the Navajos have taken steps to implement their program. In February this year, by a vote of 63 to 0, the Tribal Council instructed its chairman, Paul Jones,

to name a commission of five members to survey potential park and monument sites and make recommendations to the Council.

Many times in the last 20 years I have toured the more accessible areas of Monument Valley with Harry Goulding who, with his attractive wife, Mike, have operated the Goulding Trading Post for more than 30 years. The Trading Post, now enlarged to include well-furnished guest accommodations, is as much a part of Monument Valley as are the hogans of the hundred or more Navajo families, who with their ancestors, have herded sheep in this remote desert region since the early 1860s when Chief Hoskaninni fled with a little band of irreconcilables into this remote region as a hideout. This happened at the time when Kit Carson was rounding up the Indians in Canyon de Chelly for removal to a concentration camp at Fort Sumner. Most of the Indians in Monument Valley today are descendants of the Hoskaninni band.

The only access to this region today is over Highway 47 which crosses Monument Valley as the motorist drives south from Monticello, Utah, to Kayenta, Arizona. This sector of Highway 47 is a graded gravel road, fairly smooth on the Utah side, corrugated on the Arizona side. Side roads extending across the floor of the Valley are sandy, and unsuitable for the conventional cars of today.

During many trips into the Valley I have in some measure learned to share Harry Goulding's deep attachment to this land and its native American inhabitants. I have confidence that

under Indian ownership and management, and accorded the federal aid that is granted to all national parks and monuments, it would become one of America's most popular recreational areas.

Mike and Harry Goulding, as a young bride and groom, came to this place in 1924. They lived in a tent while they erected the stone building which still serves as a trading post. Their nearest supply points at that time were Flagstaff, 200 miles to the south in Arizona, and Thompson, about the same distance in Utah.

The Indians were shy at first, but before long the young cowboy and his friendly wife were recognized as friends. Harry and Mike both learned to speak the language.

There were practically no roads in the region, but Harry began breaking trails across the desert floor that lies around the great monoliths which give the Valley its name. Venturesome travelers began coming into the Valley and the Gouldings provided modest accommodations for them.

Today visitors come from all over the nation, by auto and plane, to sit on the veranda of the spacious lodge at the base of a 1000-foot cliff and enjoy a landscape picture that extends for 100 miles and more. Jack and Marge Sleeth, who manage the guest accommodations and provide jeep guide trips for guests, have made it



Harry Goulding stands beside the ruins of one of the ancient cliff dwellings which he hopes to see protected by including the area in a national park.

possible for the Gouldings to relax after their many years of pioneering.

But Harry still finds time to keep close contact with his Navajo friends. He is a welcome visitor in every hogan, for there is no family in Monument Valley which at some time has not been helped by his interest and generosity.

In May this year I had an opportunity to return to Monument Valley, and with Harry as guide, extend my exploration into some of the remote areas I had not yet seen. Actually, Monument Valley covers an area ap-

proximately 40 by 50 miles—most of them roadless miles.

Early one morning we left the trading post in one of the jeep station wagons Harry uses for guided tours, and headed toward the Mystery Valley area.

We stopped briefly at the Seventh Day Adventist Mission Clinic where Marvin and Gwen Walter are contributing magnificently to the health and education of the Navajo families in the region. Their little group of mission buildings, erected on a site donated for the purpose by the Gould-

Prehistoric Indians created this room by building a rock and mud wall in a crevice. It probably was a storage vault.



Wind and water down through the ages have carved many strange formations in the De Chelly sandstone of Mystery Valley.



ings, is serving the same role in Monument Valley as is the Presbyterian Mission Hospital, for many years under the direction of Dr. Clarence G. Salsbury, at Ganado on the reservation farther east.

Our destination was a sector of Monument Valley which has been given the name Mystery Valley because continued exploration constantly reveals new and unexpected rock formations and evidence of prehistoric occupation. The great rim-rock cliffs which partly enclose this area are serrated with lovely coves where prehistoric Indians found overhanging shelter for their mud and stone cliff dwellings.

While there is no road into this area, the sandy floor of the valley is crisscrossed with jeep tracks, and Harry told me there has been considerable vandalism at the cliff ruins in recent years. However, many of the walls are still standing, and whether or not this place is to be designated as one of the Navajo parks, it is to be hoped that funds will be available for Indian police to patrol the ruins.

Mystery Valley could have well been named the Valley of the Arches, for the visitor motoring along the floor of the desert is nearly always within sight of one or more of the many stone windows which millions of years of erosion have carved in the cliff walls. There is Waterfall arch, Stout arch, Full Moon arch, Double arch—over 30 of them altogether, some vertical and some horizontal. The cliffs themselves are fantastically eroded. There are spires, turrets, domes, castles—all the work of erosion in the colorful De Chelly sandstone of the region.

Botanically, this is the zone of the

juniper and pinyon, and while the land is too arid for a dense growth of these desert trees, they are sprinkled over the horizon in every direction. Growing in the sandy floor we saw hedgehog cactus, desert holly, lupine just coming into blossom, and yellow bee clover in full bloom.

Once Harry pointed to a cliff rose which the Navajos call *Awai-itsa*, or baby bush. The inner bark of this shrub is twisted and fluffed and used by Indian mothers to absorb the moisture in the baby's cradle board. It has a silky talcum feel and keeps the baby's skin from chafing.

As we rode along Harry talked much about his friends the Navajos, and their problems. The tribe now has an able administrative organization, the Tribal Council. It is composed of four representatives from each of the 18 districts into which the reservation is divided. He especially praised the work of Frank Bradley, one of the tribal representatives from the 8th district which includes Monument Valley. It was largely through his efforts that the Bradley boarding school at Kayenta now makes it possible for all the Monument Valley children to attend school within easy travel distance of their homes. That is, they are close enough that their parents may visit them occasionally. Also, Bradley is a member of the newly appointed Navajo Park Commission.

As we drove along Harry stopped often to pick up a discarded bottle or tin can which a thoughtless motorist had tossed to the sands. "The Indians do not litter the landscape," Harry said. "These cans and bottles were deposited here by motorists who do not share the reverence for the good

earth which is part of a Navajo's religion."

Occasionally we passed a flock of sheep, attended now by children too young for school, or by elders beyond school age. Harry always stopped to exchange a few words in their own language, and give them oranges from a crate he carried in the jeep. It is easy to understand the deep affection these people have for the man who as a neighbor has shared their problems for over 30 years.

Harry Goulding has complete confidence that the Navajo Indians can carry out the park program they have initiated, if the Bureau of Indian Affairs and the U. S. Park Service will give them friendly cooperation.

However, in undertaking the program they have announced, the tribal leaders will welcome the cooperation of both the Bureau of Indian Affairs and the National Park Service. The Indians realize that in such a program they have much to learn from the experience of their white neighbors, and it is their hope that they can maintain a cordial relationship with the federal agencies.

One paragraph of their tribal resolution reads: "The Navajo Tribal Park Commission shall not have authority to deprive any Navajo Indian or his heirs of the right to continue to use any area of Navajo tribal land in the same manner he was using such area at the time a Navajo Tribal Park or Monument was established embracing such area."

While the parks and monuments on the reservation are to be established for the use and recreation of all Americans, and in fact their profitable operation will in large measure depend on

Double Arch — created by millions of years of erosion in a remote sector of Monument Valley.



making them attractive to their off-reservation neighbors, Harry Goulding feels that there will be no conflict of interest. He is hopeful that the visitors from outside the reservation will encourage a revival of such Indian crafts as weaving, silverwork and basket-making. The Navajos, like the Paiutes, are adept at making the old-time water baskets.

Monument Valley will not much longer be isolated by bad roads to the extent it was in former years. The State of Utah is now black-topping Highway 47 from Blanding to Bluff. While I was in Monument Valley a contractor's representative was there to make a preliminary report for the extension of the paving from Bluff through Mexican Hat to the Arizona border. Completion of this sector will leave a gap of approximately 25 miles from the Utah border to Kayenta yet to be paved to provide Monument Valley with a good through highway. The Indian Department is reported to be making plans for the black topping of this corrugated link.

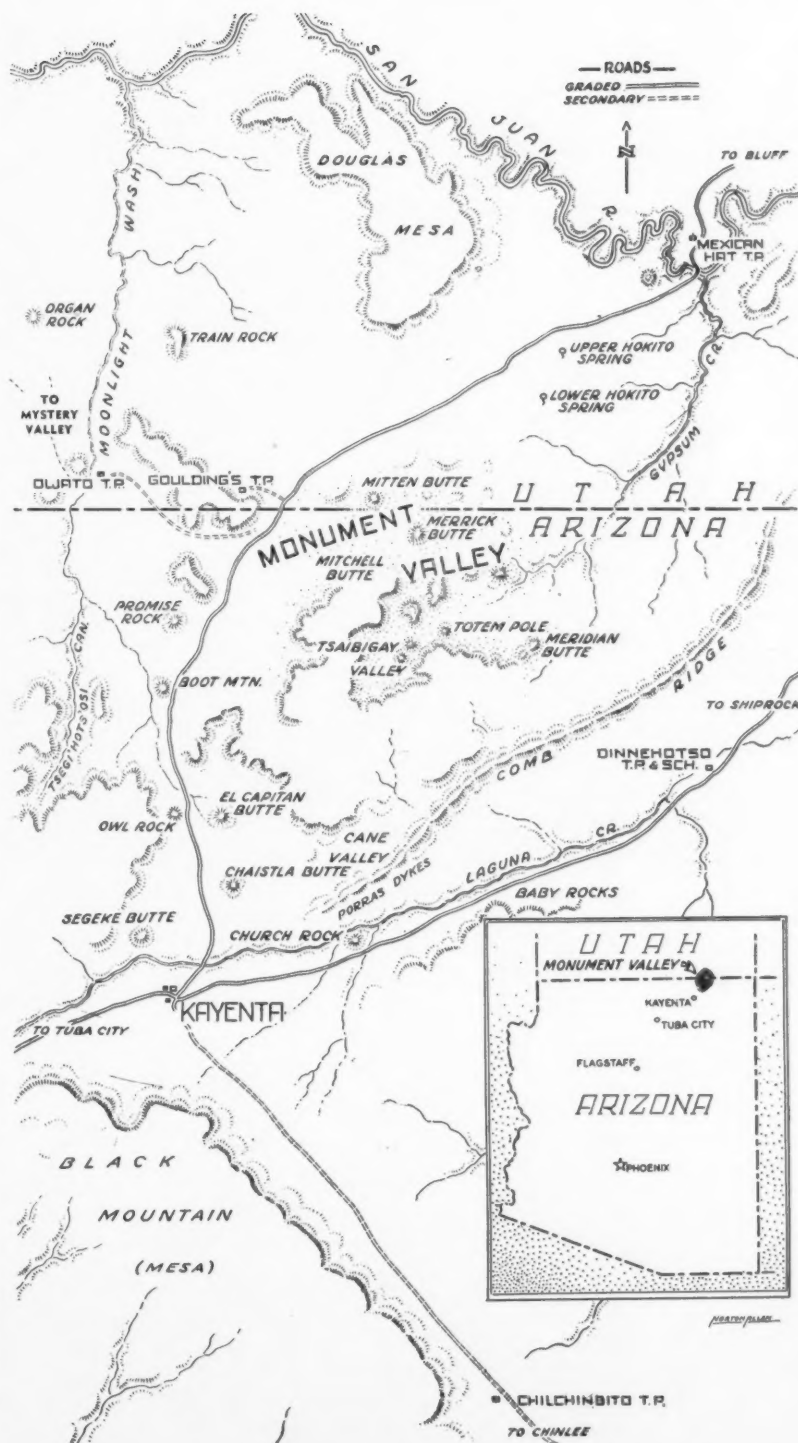
Rusty Musselman, who has a trading post at Bluff, Utah, recently began the operation of a 3-times-a-week stage line from Monticello to Flagstaff — providing public passenger facilities through Monument Valley for the first time in history.

There are other road plans which will add greatly to the accessibility of the Monument area. The Navajo Trail Association, of which Robert Ayers of Durango, Colorado, is president, is working diligently to secure the improvement of a road which extends west from Highway 666 in the Four Corners region, roughly parallel to the Arizona-Utah border, and connects with Highway 47 at Kayenta. The paving of this highway would complete a scenic triangular route through the Navajo reservation — from Shiprock through Monument Valley and Kayenta to Tuba City, thence through Oraibi, Ganado and Window Rock to Gallup, and back over Highway 666 to Shiprock.

Undoubtedly such a road would very soon become popular with American motorists, and it would make schools and hospitals more accessible to great numbers of Navajo and Hopi Indians in the northern part of their reservations.

Harry Goulding feels that there are a number of scenic and historical sites on the Navajo reservation which are entitled to national park or monument status. He mentioned Shiprock, Coal Canyon and areas in the Lukachukai Mountains, in addition to the great Monument Valley region.

Late that evening when Harry and



I wound our way back over the floor of the valley to the cliff house which has been the home of Harry and Mike Goulding for nearly a generation, the mental cabinet where I keep pictures worth preserving was loaded to capacity with visions of golden sand dunes, fantastic natural arches, prehistoric Indian dwellings—and of dark-

skinned and bright-eyed youngsters who perhaps will have a better opportunity to develop their latent abilities if they can have more contact with the best in the white man's civilization. I share Harry Goulding's hope that some day—not too long distant—Monument Valley will become a Navajo National Park.



Photo by Don Ollis

THE CHIEFTAIN

By GRACE BARKER WILSON
Kirtland, New Mexico

The chieftain rests. For ages all unnumbered
In this dim place his quiet bones have lain;
But never think his restless soul has slumbered;
He stalks abroad on desert, mesa, plain.

Though archeologists of late have spied him,
And bared his remnants to the public view,
He haunts the trails of those who once defied him,
And shouts a voiceless battle cry anew.

The ruins of his home are tourist treasures,
Explored and photographed just for a day.
But riding on the wind to martial measures,
He leads what spirit warriors, who can say?

CONVERSION

By SALLY HARVEY
Monrovia, California

At first I could not see
The beauty in this land—
But sparse, unlovely growth
And cactus-studded sand.

Then I saw the hills
Turned rosy by the dawn,
And a soft purple-blue
When night was coming on.

Golden flowers spread
As far as one could see—
Desert colors of spring
Have made a fan of me!

JOSHUA TREE

By SALLY HARVEY
Monrovia, California

So lonely—
A stark figure against the sky.

And twisted,
The black thick limbs awry.

How white
The blossom in the spring,

Indomitable—
Of all the desert, king.

What Price Peace?

By TANYA SOUTH

What price peace, of wrongs compounded?
Greatness is on struggle founded!
Peace is but a phase—no more.
For the pendulum will swing,
And we grovel or we soar,
Or we're mute, or shout or sing,
As we earn and as we learn
All the things for which we yearn.

Ah, attainment is a raiment
Not acquired without full payment.
Be it peace or be it war,
Man can only learn to soar
Through his striving with each grain—
Which is always pain.

The Cholla's Deceit

By DARWIN VAN CAMPEN
Phoenix, Arizona

Old man of the desert?
White from ageing years?
Give you cause no longer
For intruder's lingering fears?

Has your vengeful cactus spirit
Lost the vigor of its prime?
Do you let your home's intruders
Go unpunished for their crime?

Aid you not your brothers
In defense of your own land?
Have you at last deserted
Their staunch defending band?

Ouch! I've found you out
You masquerading fake.
You held your barbs in waiting
Till I caused the ground to shake.

Then with youthful quickness
You hurled them at my feet,
And your beguilement was effective
Because you've caused me to retreat.

TWILIGHT DREAMS

By MARLENE CHAMBERS
Bloomington, Indiana

The desert sunlight haunts my dreams today;
Before it scatter all the dull delights.
Their feeble radiance fades within the ray
Whose brilliance drives their half-light into night.

How tired and dull, how worn and pale the dreams
That seemed so fresh and bright an hour ago!
Like tumbleweed before the wind, their beams
Are driven afar—banished by desert glow.

But ghost of sun is fickle in its flight;
And though my famished sight bids it remain,
The vision vanishes. The heavy night
Descends. I call the phantom back—in vain,

An alien amid the northern snows.
My dreams will always seek the desert rose.

VAGABONDS

By MARIE H. EUBANK
La Verne, California

Let's go down the winding road,
Fear and care abandon.
Choosing for our day's delight
Lovely paths at random.

Let's seek hilltops few have trod,
Or roam through meadows green.
Pausing in our joyous flight
To praise a power unseen.

Let's test the lure of desert land.
From toil let's find release.
Scuffing our feet through drifted sand
As we bask in quiet and peace.

Let's catch the beams of sunlight
Filtering through the trees.
Or cast a fly in shimmering pools,
Nature's gift to seize.

Let's not shrink from the raindrops
Lowering clouds would send.
Ecstatic vagabonds let's be
To our journey's end.

It's much easier to grow these colorful desert natives in your garden than you think — and this month the dean of desert nurserymen, Ted Hutchison of Calico, tells you how.

Red Blossoms in Your Desert Garden

By TED HUTCHISON

ON THE California deserts grow five red-blossoming perennials that are easily adapted to the home garden. All that is required is a little understanding of their simple needs.

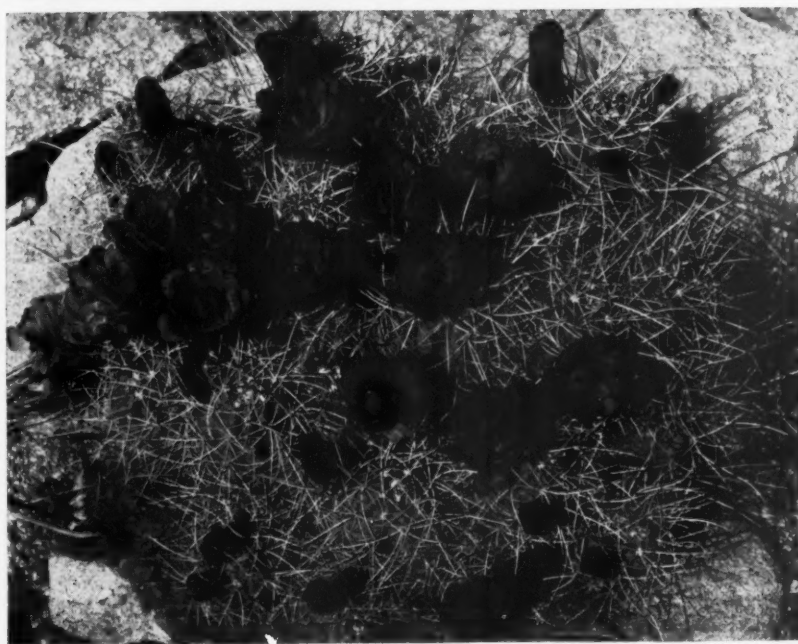
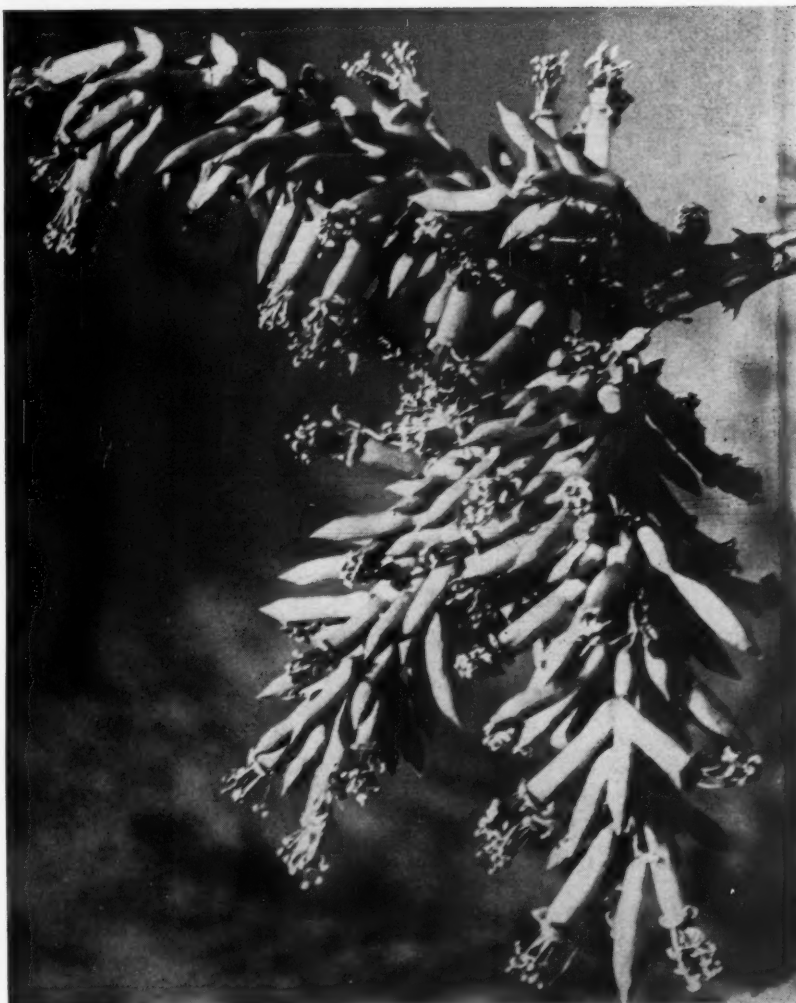
These plants are Chuparosa, Mojave Claret Cup, Ocotillo, Scarlet Bugler and Scarlet Locoweed. They range from sea level to 7000 feet and most are easily grown from seed. Some can be started from cuttings or transplanted, but laws of the Southwestern states prohibit the removal of native vegetation. Therefore, these plants should be obtained from nurseries—and it is not against the law to collect seeds on the desert except within National Parks and Monuments and State Parks.

While desert plants are very drought resistant after they are established, they need plenty of moisture to start from seed or to resume growing after transplanting. They also like a bit of fertilizer and apparently are not particular which kind you give them.

Once established, these plants do best with a few long thorough soakings each year. Water several feet away from the crown of the plant to train the roots to spread out. Continuous moisture is not good for the plants and short surface sprinklings are especially bad.

Seeds can be started directly in the ground or in containers for later transplanting. Tin cans or glazed pots are preferred to red clay pots which dry quickly on the desert. Milk cartons serve well, too, but whatever type container you use, be sure to shade it from the hot sun or the tender roots may be cooked by the heat.

*Above—Blossoms of the Ocotillo.
Below — Mojave Claret Cup or
Mound Cactus. Photo by Roy Miller.*



Plants need not be removed from cartons or cans when you want to establish them in permanent locations. Merely slit some holes in the bottom and sides of the containers and place them in the planting hole. When removing plants from pots, first give them a good soaking to eliminate the danger of roots sticking to the container. And once in the ground, keep your plants damp until they are growing well.

Best time to transplant larger plants is when they are in their dried out or dormant phase. They should be kept moist until re-established.

Here are some planting hints on the five plants mentioned above:

Chuparosa (*Beloperone californica*), found on the Colorado Desert in washes and among rocks in the warmer areas. A reedy bush, two to six feet tall with tubular, flaring flowers. This is a heavy bloomer and in mild winters may flower all year around. Seed pods are club-shaped with four to six BB shot-like seeds which are hurled when the ripe pods burst. To collect seeds, cover the green pod with a small piece of cloth or tobacco sack.

Temperatures of 15 degrees Fahrenheit or lower may damage this plant, but it will come up again from the roots. Sow the seed in the spring and by fall the plants will be large enough to begin flowering. The flowers vary in shades of red and sometimes cuttings can be started from plants that have a particularly fine color. Some of the most spectacular specimens of Chuparosa I have seen were at the Borrego State Park Headquarters where they had been shaped into columns three feet in diameter and six feet high. In the spring these columns were solid masses of red.

Mojave Claret Cup or Mojave Mound Cactus (*Eschinocereus Mojavensis*) is found in high altitudes. Clusters of two inch heads medium to heavily spined, the clusters up to two feet across and one foot high. Blooms shaped like stemmed wine glasses in brilliant burnt red colors. Seeds small, black, in a juicy berry very much relished by pack and kangaroo rats and chipmunks so they are rather scarce when ripe.

This is a plant for cold to medium locations which can tolerate tempera-

tures as low as zero degrees Fahrenheit. For planting on warm desert areas, keep under lath or in shade of an open tree. This plant is easily transplanted but hard to start from slip and growing from seed is for specialists. In transplanting care should be taken not to bruise the plant or it may rot.

Ocotillo (*Fouquieria splendens*) is found on the warmer deserts in well-drained soil. Clusters of long thorny branches to 10 feet or more in height. Spikes of red flowers at the tips of the branches. The plant grows its foliage of green leaves only after rain and flowers if that rain is heavy enough. Seed pods are straw colored with half inch flat seeds covered with white "cotton."

This is a plant for warm to medium locations and will withstand temperatures of 10 degrees Fahrenheit. It grows very easily from seed, slips easily and transplants well. Plant seed in the spring after soil is warm and if kept damp will grow rapidly—as much as 15-inches the first year. Cuttings or transplants should be kept damp until growth starts. This plant, grown as a hedge, has long been used as a coyote-proof fence on the desert.

Scarlet Bugler (*Penstemon centranthifolius*) is found in the western desert areas and on over into the coastal side of the mountains. It is almost a herbaceous perennial, the long spikes dying back after flowering. It has tubular red flowers on spikes up to two and a half feet long, a foot and a half of the stem being in flower at one time. Clusters of seed pods full of brown seed follow the flowers.

This is a plant for warm and medium areas and can tolerate temperatures as low as 10 degrees Fahrenheit and possibly lower. It is very easily started from seed in the spring and will flower the second year. Oftentimes seed scattered by the wind will sprout around the garden. In Yucca Valley there is a border of this plant around a cactus garden and volunteers are coming up among the cacti and adjacent desert.

Scarlet Locoweed (*Astragalus coccineus*) is found in high desert altitudes growing up to eight inches in height. It has a fuzzy gray pea-like foliage with clusters of red flowers. The pea-like pods also are fuzzy and the seeds are small, brown and flat.

This is a cold to medium weather plant. Possibly it could be grown in warmer locations if planted in shady places. Start seeds in September or in the spring. One year I started some in September and one plant flowered in midwinter, the container it was in often freezing solid at night.

Hard Rock Shorty of Death Valley



It was mid-summer, and from the leanto porch in front of the Inferno store the dust devils could be seen whirling across Death Valley's salt flats.

The dude prospector who had stopped at the store for a cold drink, ambled out on the porch where Hard Rock Shorty was taking his afternoon siesta.

"They look like miniature tornadoes," he remarked, by way of conversation. Shorty opened his eyes and asked, "Did you say something about tornadoes?"

"Oh, I was just watching those little whirlwinds stirring up the dust. They are small-scale models of the big tornadoes we have down in Texas."

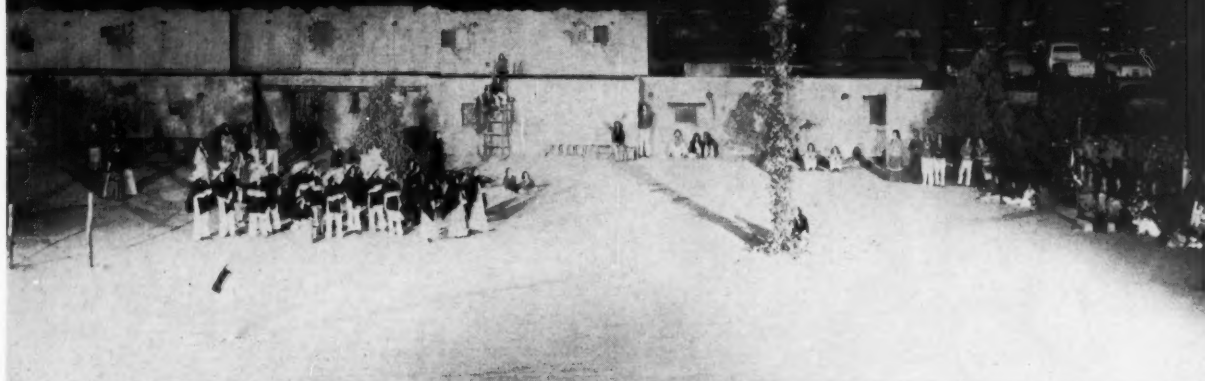
"Only difference is them Texas cyclones do a lot o' damage," Shorty answered, "an' these little dust devils is harmless."

"Fact o' Pisgah Bill put 'em to work one summer," Shorty went on. "Bill wanted to build

a corral fer his pack mules, an' he figured he'd let them wind whirligigs do the hard work.

"He put a couple o' wind wings on the top of his post-hole auger, and then he'd set the auger in the ground a few inches and wait in the shade until one of them dust devils came along and drilled the hole fer 'im. Took a lot o' time that way, but time meant nothin' to Bill—he had all summer to build that fence, so he jest waited.

"Scheme wuz workin' all right, an' Bill had about three-quarters o' them holes dug. Then along in September the weather changed an' them whirlwinds got bigger 'n stronger. They'd turn that auger so fast it would bury the drill in the ground, handle an' all. Bill never could figger out a scheme fer puttin' a brake on it. Finally ran outta money buyin' new mail order augers—an' he never did get that corral finished."



Los Voladores—an ancient Aztec rite—is performed by Smoki dancers atop a 50-foot pole. Photo by Al Cirou.

When the Smokis Dance at Prescott . . .

Each August the ancient and sacred rituals of the American Indians are faithfully re-enacted in Prescott, Arizona, by the Smoki People — white men and women who donate many hours in study, rehearsal and work to make these presentations as nearly perfect as possible. Here is the story of this praiseworthy civic organization whose purpose it is to preserve for all time the ceremonies of the rapidly integrating first Americans.

By THOMAS B. LESURE

THE EVENING shadows had turned to thunderous clouds over the picturesque pueblo. Forked lightning streaked the sky in all directions, and torrents of rain whipped by a strong wind all but turned the plaza into a quagmire. Yet, despite the storm, the steady beat of an Indian drum and the rhythmic chant of snake dancers continued unabated. Snakes in hand and rattles clacking, the dancers stepped their serpentine way around the plaza, never stopping, never missing a beat, never slipping. It was an amazing performance, made even more impressive by the weather.

That was my introduction — some four years ago—to the Smoki People

Smoki drummers use authentic cowhide drum to rap out the beat for the dancers. Photo by Al Cirou.





The mark of a Smoki Chief. The tattoo and the silver and turquoise ring bearing the same markings symbolize a past chief of the Smoki People. Photo by Al Cirou.

Picture-of-the-month Contest . . .

For the photographer, the desert offers a wide and interesting variety of camera subjects: Indians in colorful costumes, sunsets, plants, animals, mountains, insects, rivers, clouds, strange rock formations and people enjoying themselves in the desert environment. And for the photographer whose picture is judged a winner in our monthly photo contests, *Desert Magazine* offers cash awards. It's an easy contest to enter and there is no limitation on your photo subject so long as it is of the Desert Southwest.

Entries for the August contest must be sent to the *Desert Magazine* office, Palm Desert, California, and postmarked not later than August 18. Winning prints will appear in the October issue. Pictures which arrive too late for one contest are held over for the next month. First prize is \$10; second prize \$5. For non-winning pictures accepted for publication \$3 each will be paid.

HERE ARE THE RULES

- 1—Prints must be black and white, 5x7 or larger, on glossy paper.
- 2—Each photograph submitted should be fully labeled as to subject, time and place. Also technical data: camera, shutter speed, hour of day, etc.
- 3—PRINTS WILL BE RETURNED WHEN RETURN POSTAGE IS ENCLOSED.
- 4—Entries must be in the *Desert Magazine* office by the 20th of the contest month.
- 5—Contests are open to both amateur and professional photographers. *Desert Magazine* requires first publication rights only of prize winning pictures.
- 6—Time and place of photograph are immaterial, except that it must be from the desert Southwest.
- 7—Judges will be selected from *Desert's* editorial staff, and awards will be made immediately after the close of the contest each month.

Address All Entries to Photo Editor

The Desert Magazine

PALM DESERT, CALIFORNIA

of Prescott, Arizona, who are noted throughout the country for their colorful and faithful presentations of Indian ceremonial dances. And it set me to wondering.

Who are these people? How did their tribe begin? What goes on behind their annual ceremonials? How do they become so proficient in their dances? These and other questions.

Last August, I again had an opportunity to see the Smoki People. My wife, Nan, and I drove to Prescott a few days before the Ceremonials, talked with the members of the tribe, watched their preparations for the dances and once again saw a memorable performance. But even more impressive were the People themselves and the work they accomplish.

The Smoki People are not, as one famous encyclopedia erred, "an almost extinct tribe of Arizona Indians." The mistake was understandable, though, since a Smoki in paint and costume often is indistinguishable from a real Indian—so authentic and complete are their transformations at Ceremonial times. Actually, the Smokis are white men and women from Prescott who have dedicated themselves to the preservation and presentation of ancient Indian ceremonials, mystic rites and legends. There are now about 300 active members. Another 300 persons who, "once a Smoki always a Smoki," have moved from Prescott but still retain their status in the tribe.

They come from all walks of life and are of all ages. We met bankers, shoemakers, doctors, merchants, dentists, public utility officials and even a U. S. Senator. "I guess there isn't any business or profession that is not represented among the Smoki People," one member told us. "And we have had performers ranging from babes in arms to 80 year olds."

Though usually well-known among Prescott residents, the Smoki People are reticent about personal publicity and their bylaws expressly forbid individuals publicly being called by name. They feel that the tribe—not its members—is the important thing, and they carefully retain an air of anonymity when you ask for public identification. That is why there are no names in the captions of the photographs accompanying this article. Indeed, it was only with great persuasion that we were even able to obtain photographs of individuals before they assumed their Indian roles.

However, there is one way you can always tell a Smoki: look for a tattoo on the outer edge of his left hand. Men are marked with four dots in a row . . . , while past chiefs have a crescent added Women are

marked with slants // and past head squaws have an added dot // . .

The Smoki People originated in 1921 when the Prescott Frontier Days Association staged a one-day fund raising celebration called, "Way Out West." Part of the fun was a Snake Dance which old-timers claim was realistic despite the prevailing mirth. The dance caught the public fancy and was repeated the following year. But, this time it was called the Smoki Dance, "Smoki" being a coined word with roots in the old Moki tribe of Hopi legend. By 1924, the spirit of mirth that characterized the first performances began to disappear, and the Smoki People of today — with their authentic and artistic dances — emerged. The Smoki Ceremonial became an event in itself. And through the years, intensive research and a spirit of dedication have made the Smokis acknowledged masters of the art of staging faithful reproductions of a wide variety of Indian ceremonials.

Now each August—usually on the

first or second Saturday—the Smokis stage a one night performance of about five dances ranging from 15 to 35 minutes each. There may be the Zuni Shalako, Hopi Buffalo, Navajo Fire, Shoshone Banda Noqai, Eagle, Corn, Feather, Sun or other dances. But always the program is opened with the making of a huge Smoki sand painting, and is closed with the Smoki Snake Dance.

A permanent pueblo stage in the infield of the County Fairgrounds, a short distance from downtown Prescott, is the Ceremonial setting. From the grandstand it presents the appearance of an authentic Indian village complete with trees, ramadas and outdoor ovens—all backed by the pine-clad hills that encompass the town. Behind scenes the pueblo is an orderly maze of make-up rooms and storage sheds.

In addition, the Smoki People maintain two rustic stone buildings on a knoll on the east side of Prescott. Known as the Smoki Museum and

Pueblo, they are the showplace and home of this unusual tribe. Both were built entirely by Smoki members, and are authentic reproductions of ancient Indian architecture.

The Pueblo, however, is not open to the public. It is the center of Smoki social and tribal life with rooms like the Sanctum decorated in an Indian motif and the important fireplace-backed Council Table. Here, too, is the Smoki library—one of the most extensive specialized sources of Indian ceremonial lore in the country. For those who are privileged to visit it, the Smoki Pueblo is a quietly imposing place steeped in the traditions and legacies of ancient culture.

The Museum, open daily from June through September, is a treasure house of Yavapai County and Smoki relics. Huge Zuni Shalako figures stand guard over a faithful ladder-crowned reproduction of a Hopi kiva at Oraibi that fills the center of the large room. Around the edges of the pine and sapling beam-ceilinged room and in nu-

Before and after—Two Smoki tribesmen are transformed into "Indians" with make-up, costumes and wigs. Photos by Al Cirou.



merous show cases are thousands of artifacts.

The museum also is the repository for most of the costumes and paraphernalia used in the ceremonials. Though this section is not usually shown to the public, we were fortunate in having a look behind the scenes of last year's Ceremonial. Although about 75 percent of the material had been removed for the day's performance, we counted more than four score boxes, each marked to show their contents, dozens of Hopi Kachina masks, and hundreds of buckskin and cloth dresses, bells, rattles, prayer sticks and other items.

To try to estimate the amount of

work these costumes represent is virtually impossible. None of the Smoki people with whom we talked could even begin to figure the total value of time, material and effort, but all agreed it amounted to thousands of hours and dollars. One costume might take several months to produce, another only one day. All are made during hours freely donated by tribal members. The costumes, as authentic as possible, are made for durability—to be used time and time again for appropriate dances.

An idea of the tremendous amount of work put into each annual Ceremonial can be had by citing the example of last year's chief and one of his ceremonial priests. Together, they

devoted more than 3000 hours or 37 40-hour weeks each—in addition to their regular jobs!

According to Mrs. Bernice Insley, curator of the Smoki Museum and author of *Indian Folklore Tales*, members of the tribe begin talking about the next ceremonial almost as soon as they put away the costumes of the current year's dances. A new chief is elected in the fall, and by the first of the year the Smokis have chosen the dances to be performed in August.

A director and cast are appointed for each dance, and the intensive research begins. Especially important are the Bureau of Ethnology reports made in 1879 for the Smithsonian Institution. These are complete in almost every phase of the dance—from symbols on the costumes to the order of dance steps. Still further research is made to insure complete detail and authenticity. If the chosen dances still are being performed by Southwestern tribes, the chances are members of the Smokis have seen them, and they are called on for first-hand reports.

The women—and men, too—begin making the needed costumes. Sometimes old outfits can be made over, but more likely a completely new one is created. Bells, rattle gourds, shields and other accessories, of course, remain standard except for changes in symbols. But, even here, small repairs and changes add up to many man-hours of work.

The Smokis chosen for the dances begin to practice their steps months before the performance date. Not only must they learn the sequence of steps, they also must perfect their interpretive knowledge of the dance and its chant. As in real Indian ceremonials, everything must be as perfect as humanly possible.

Meanwhile, the make-up men study the required markings and collect the needed paints. Other committees swing into action, doing their appointed tasks, until the whole group is active. It is, in truth, a year-long job.

The Smoki People begin collecting snakes in April or May. Instead of the rattlers used in the Hopi dance, they use non-poisonous bull snakes. The reptiles are deposited in a snake pit between the pueblo and museum where they are kept until just a few hours before Ceremonial time.

"Snakes are getting scarce around here, though," one past chief complained, "and we're thinking of keeping them from year to year. Of course, that presents a problem in feeding, but we're learning from zoos how to raise rats, and supply other food to keep them happy."

As Ceremonial day approaches last

TRUE OR FALSE:

One way to become acquainted with the interesting facts about the Great American Desert without spending money for gasoline and tires is to devote an hour once a month to *Desert Magazine's* quiz lesson. You'll not answer all of these correctly, but it is no disgrace to be wrong. Twelve to 14 is a fair score, 15 to 17 is excellent, 18 or over will send you to the head of the class. The answers are on page 36.

- 1—A chuckawalla lizard is more venomous than a gila monster. True..... False.....
- 2—Beaver trapping is still an important industry along the Colorado River. True..... False.....
- 3—The Rainbow Bridge National Monument is in Arizona. True..... False.....
- 4—Hematite is an iron ore. True..... False.....
- 5—The man who killed the notorious outlaw Billy the Kid was Pat Garrett. True..... False.....
- 6—Desert mirages are seen only during the summer months. True..... False.....
- 7—The old Spanish trail known as *Camino del Diablo* crossed the Colorado River at Yuma. True..... False.....
- 8—Greasewood or creosote bush never grows below sea level. True..... False.....
- 9—The site of old Fort Calville normally is buried beneath the waters of Lake Mead. True..... False.....
- 10—Charleston Peak may be seen from Las Vegas, Nevada. True..... False.....
- 11—Indian symbols incised in rock with a sharp tool are known as petroglyphs. True..... False.....
- 12—Stalactites form on the ceilings of caves, stalagmites on the floor. True..... False.....
- 13—Roadrunners have been known to attack and kill rattlesnakes. True..... False.....
- 14—The capitol of New Mexico is Albuquerque. True..... False.....
- 15—The leaves on Aspen trees turn yellow in the fall. True..... False.....
- 16—Certain species of woodpeckers drill holes and raise their young in cavities in Saguaro cacti. True..... False.....
- 17—Havasupai Canyon where the Supai Indians have their reservation is in the Panamint Mountains of California. True..... False.....
- 18—Hanksville is the name of a town in Utah. True..... False.....
- 19—The reservoir behind Davis dam in the Colorado River is known as Lake Mead. True..... False.....
- 20—Imperial Valley in California is irrigated with water from the Salton Sea. True..... False.....

minute touches are added to costumes, dances are brought to a peak of perfection, and the pueblo set is refurbished. The degree of cooperation—even from outsiders—is amazing. The Santa Fe Railroad, for example, runs its regular daily train from Phoenix to Ash Fork through the city half-way through the performance. Instead of blowing the train's whistle, the engineer quietly proceeds past crossings manned by torch-burning members of the Smoki People.

It may seem that nothing ever goes wrong at a Smoki Ceremonial. At least, that usually is the impression from the grandstand. But mishaps do happen.

About two years ago one of the snakes swiped the black wig right off a performer's head. Luckily, he was near enough to the pueblo to duck into it, reset his wig, and rejoin the line of dancers without anyone in the audience being aware of it.

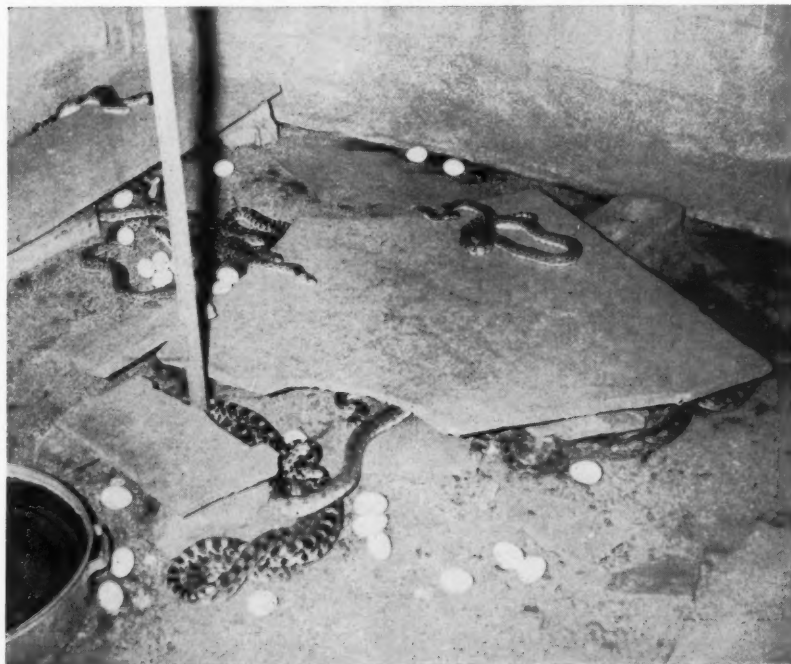
Not too long ago, Mrs. Insley—who was given the name "Nokomis" meaning grandmother—played the part of the Spider Woman, famous in Southwestern Indian legends. In the course of the ceremonial, two smoke pots were supposed to have been set off at intervals to create a mystic smoke screen while she produced the snakes. Instead both accidentally went off at the same time.

"Why," she laughingly recalled, "I



Make-up man applies ceremonial paint to Smoki snake dancer. Photo by Al Cirou.

Smoki snake pit with some of the dozens of reptiles used in the snake dance. Photo by Mel Compton.



was in an awful mess. My eyes and nose were running from the smoke, and I couldn't wipe away the tears for fear of ruining my make-up. I was supposed to get two snakes, but I couldn't find them at first, and then when I did, the threads holding them in place wouldn't break. We had a terrible time, but finally managed all right. The only trouble was the man who set off the smoke pots couldn't hear for a week!"

Devotion to a worthy cause? Yes!

And you can see the notable results yourself by attending a Smoki Ceremonial. It begins as the sun sinks behind the Yavapai Hills. The pueblo comes to life—children romp around its perimeters, women cook dinners over open fires, and one by one the colorful dances thrill the audience.

The Smoki People—who turn every penny of the proceeds back into the job of making the next year's performance even better—are truly civic minded and less concerned with their own pleasure than in bringing to the public an integral and vanishing part of native Southwestern culture.



The author dips a drink from Yaqui Well. A section of concrete pipe serves as a casing for the well, and the wood cover keeps the water clean and pure.

HISTORIC DESERT WATERHOLES VIII

Yaqui Well

Forever mixed with the waters of Yaqui Well are the undying tales of the Lost Pegleg Gold. Is this the waterhole that holds the key clue to the lost treasure? Will man ever know?

By WALTER FORD

"YES, SIR, I'm convinced that if Pegleg Smith's mine is ever found, it will not be far from this waterhole. I don't know where the mountain is where he found the water, and which they later called Smith Mountain, but there's no doubt in my mind that the spring was Yaqui Well."

The speaker was one of the perennial searchers for the Lost Pegleg Mine whose quest of many years had, according to his belief, supplied every essential clue short of the actual black scaled gold nuggets with which Pegleg Smith is supposed to have filled his pockets on the Southern California desert.

I was camped at Yaqui Well one late spring evening and after the dinner chores were completed I joined several other campers around a fire. The eerie moonlight setting among the smoke trees supplied just the right atmosphere for recounting the many tales and legends surrounding Yaqui Well, and it was not long before the conversation drifted to the subject of lost mines.

Yaqui Well was once an important California watering place on the old Julian to Imperial Valley road, via the Narrows and Kane Springs. The well derived its name from a Yaqui Indian who formerly lived there and who, according to Philip A. Bailey in his *Golden Mirages*, figured very prominently in the Warner's Ranch Indian episode of the Lost Pegleg Mine.

San Felipe Wash, in which Yaqui Well is located, is the boundary line between the two regions where the lost mine is thought to exist. Many old timers stoutly maintain that it could be in no location other than the Vallecito-Carrizo area. Others contend with equal firmness that only the Badlands of the Borrego region hold the secret of Pegleg Smith's fabulous wealth. Henry E. W. Wilson, of the latter school and dean of the Pegleg searchers, told me that during his 57 year search for the mine he rarely came as far south as Yaqui Well, except to visit his friends, the Sentenac brothers, after whom Sentenac Canyon is named and

who had a cattle ranch nearby. Henry said that the Sentenacs raised some of the finest cattle he had ever seen, but many were lost to cattle thieves. He told me of one occasion when he visited his friends and found Paul Sentenac excitedly jumping up and down, waving his arms, and shouting over and over, "He came in the night and took my cattle!" naming the culprit but seemingly unable to do anything more about it.

Since the area adjacent to Yaqui Well has had such a prominent place in the search for the Pegleg Mine, it is of interest to note what Major Horace Bell had to say concerning Pegleg Smith in his 1870 manuscript, edited and published by Lanier Bartlett in 1930. Bell wrote:

"The author has little faith in the actual existence of the Pegleg Mine, because it was reported by that artistic old liar, Pegleg Smith, whom he had the honor of knowing in the palmy days of Pegleg's lawlessness . . . Indeed Pegleg was a magnificent thief on the wholesale plan and the most supernatural liar that ever honored California with his presence. In the later days of the 50s, dilapidated and played out, he found his way once more to Los Angeles. He sat around the old Bella Union Bar, telling big lies and drinking free whiskey, the latter easy to procure when he would begin on the subject of his alleged mine of fabulous riches somewhere on the borders of the Colorado Desert. Ever since the old man died people have been searching for the Pegleg mine, but they will never find it in spite of the certain ore which he procured somewhere and exhibited, because it is a myth, a Pegleg lie."

It is not to be expected that the foregoing would deter an ardent Pegleg searcher to the slightest extent, or cause him to lose faith in his ultimate goal, which is as it should be. It is merely one man's opinion, against which a true Pegleg believer can produce much published evidence to support his own convictions.

John S. Brown, in his *Water Supply Paper*, 490, published in 1920, stated that there was usually some poor but drinkable water at Yaqui Well. It is suspected that the poor quality of the water at the time Brown made his report may have been due to contamination rather than natural causes, because the water at the well today is of very good quality. There is ample shade around the well, which makes it a popular spot for campers. Yaqui Well is located a few hundred feet to the right of Highway 78, approximately 15.3 miles west from Ocotillo or Benson Dry Lake.



Across a narrow canyon in the Rough Rock country of northeastern Arizona, members of the exploring party look down at the lovely ruins built and deserted by prehistoric Indians hundreds of years ago.

We Found a Way into an Ancient Cliffhouse . . .

In his quest for new picture subjects, Joe Muench of Santa Barbara, California, finds his way into many odd corners of the desert Southwest—and sometimes his trail leads to unexpected adventure. Here is the story of an unreported group of cliff dwellings on the Black Mesa of the Navajo reservation—and of the hazardous means by which Muench's companions gained access to it.

By JOYCE ROCKWOOD MUENCH
Photographs by Josef Muench
Map by Norton Allen

SEVERAL MONTHS ago, Joe and I were out on the Navajo Indian reservation in northern Arizona. This 16-million photogenic acres of the Southwest is one of our favorite hunting grounds for picture material. As usual, our search for new

places to photograph offered a pleasant excuse to drop in on friends and we stopped at Rough Rock Trading Post to see the manager, Bill Greene, and the Grahams, Peggy and Sprague, who operate it.

We were pleased to find Art Greene,

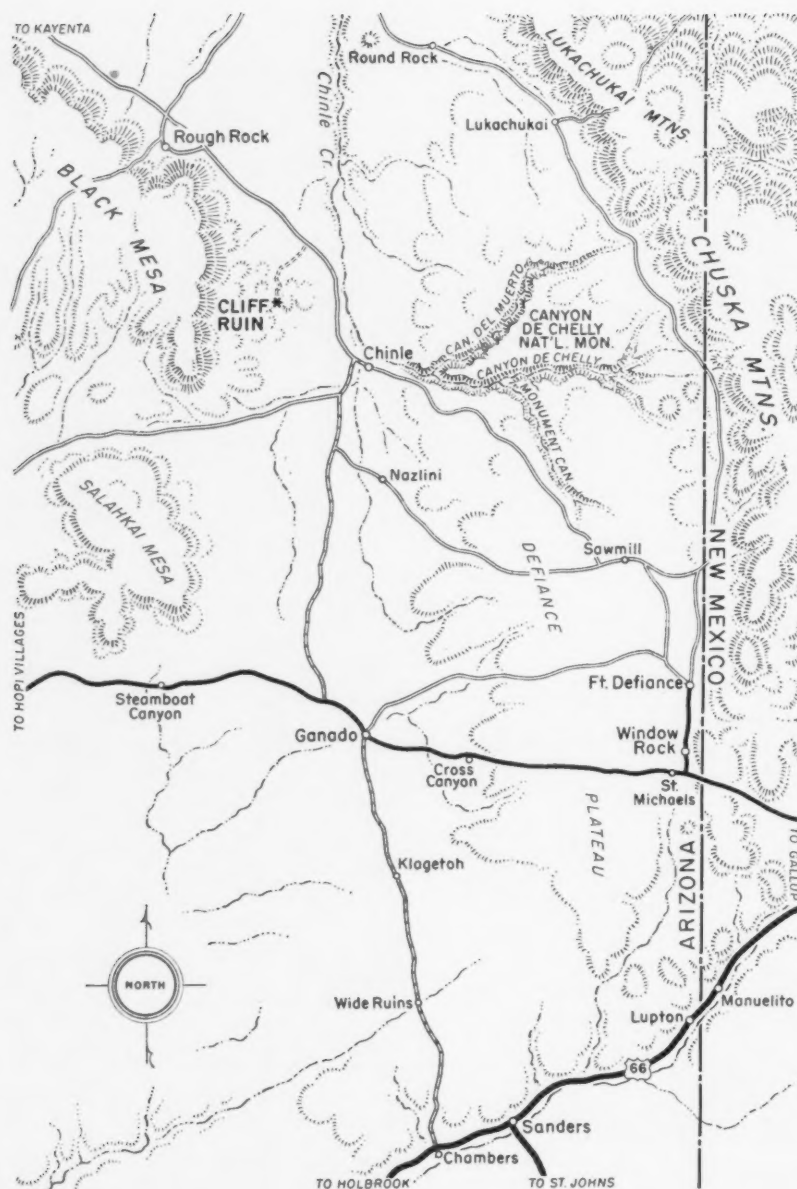
Bill's father, (who runs his excursion boat up the Colorado River in Glen Canyon, *Desert Magazine*, Jan., 1957) there, as well as another guest, George Parker. The latter was making a leisurely tour of the Colorado Plateau in a power wagon and had been making the post headquarters while he explored the Black Mesa.

That night after dinner we sat before a crackling fire in the big open hearth and it was a perfect setting for telling tales of past adventures and for discussing new ones.

Bill's voice broke through the inconsequential observations on the weather and roads, how poor the sheep looked, and what a big crop of pinyon nuts the Indians were harvesting. He told about a recent flight he made from Gallup, New Mexico. In the late afternoon, through a narrow slit in the canyon walls, he caught a glimpse of a lovely little prehistoric ruin nestling in a shadowy cave.

As he related this experience my husband sat upright and I saw an eager look cross his face.

"Well," Bill continued, "none of the Navajos at Rough Rock had ever men-



tioned this ruin, and I was curious to learn more about it. "A few days later I flew back over the same route, circled the spot where numerous canyons play out into the open desert and the sandstone shows ages of erosion. After several tries, I finally got the right angle and caught sight of the ruins again."

Art Green, who had accompanied his son on the flight, took up the story.

"It was a neat little group," he said, "but not even Joe Muench will ever get inside of that cave to take pictures. Those houses are located under an overhang at least 150 feet below the rim of the cliff, and it is another 100 feet straight down to the floor of the canyon."

An hour and two rounds of coffee later, we were still trying to talk our way into the cave, and miles of slick-rock that guard it were keeping us out. Bill had some objection to offer for every plan that was suggested.

It seemed to boil down to these hard facts: From below, supposing one could get to the canyon, there was no way up the face of the cliff without mountain climbing equipment and experience. That was out, for we were not qualified even if we had the tools. From above, the overhang would take a man on a rope out much too far—just swinging in air, with nothing to land on. Anyway, where on that slick-rock could you anchor a rope? A car couldn't climb over that expanse of

rolling, irregular sandstone, even if it proved suitable as a "deadman."

Then George Parker spoke up. "If you really want to get those pictures, Joe, I think we could do it with my power wagon and winch. I have 1000 feet of steel cable."

Sprague threw another log on the fire and our enthusiasm flared up with the flames. By midnight, we had worked out a plan of action to the last detail.

Next morning Bill, George and Joe took off in the plane to scout out an overland route from the post to the ruins. At strategic points along the way they threw out rolls of paper, and these "bombs" opened in mid-air and spread a long white trail on the ground.

Then, in the clear, cold air an hour later, the whole party started off, armed with thermos jugs of coffee, ropes, lunch, some old tires and immense enthusiasm. We went in two cars, the lumbering power wagon and our ranch wagon.

The road toward Chinle is crossed by numerous tracks. Some lead to distant hogans, some are trails bulldozed for a hydrographic survey and others just wander off in this or that direction. There were a number of false starts before we hit one that looked promising. Joe recalled seeing a wooden house, minus part of its roof, from the air; Bill had three empty hogans on a hill in mind, and George was watching for a conspicuous knob on Black Mesa to come into correct perspective. With these landmarks we located our white markers and headed toward a point, about 20 miles from Rough Rock, where the sandstone swells up to a series of rounded domes.

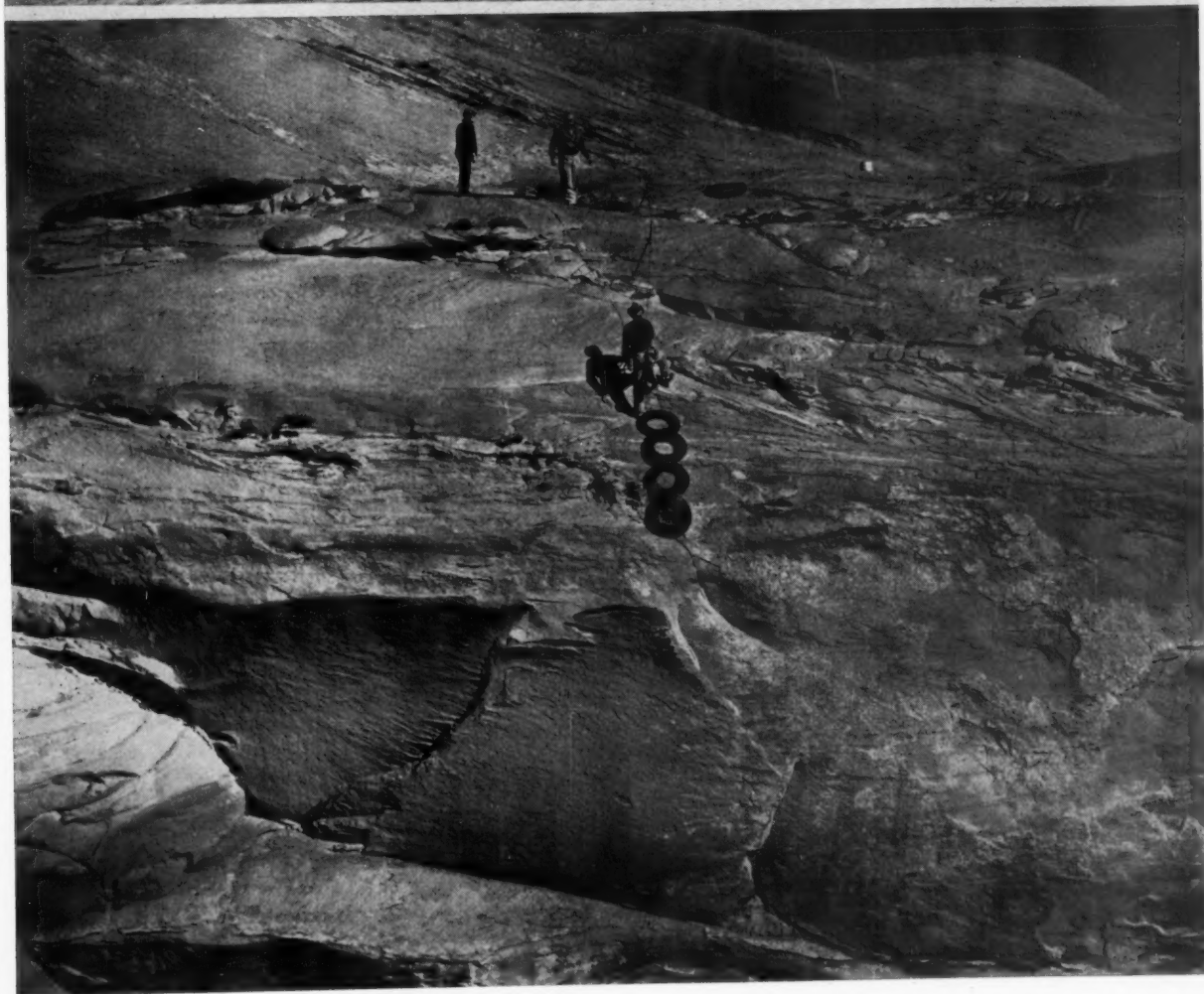
When the ranch wagon had gone as far as possible in the rough terrain, we all got into the power wagon and drove another five miles to a sweeping overlook. It took another hour on foot to pin-point the canyon and the cave.

George maneuvered the truck into a rock hollow, hoping to find some shelter from a sharp wind that had suddenly sprung up, but there was no escape from the biting gusts. I can't remember when I have been colder.

During the balance of the day we reconnoitered the area, finding that it would be possible to head the canyon

Top photograph, opposite page — George Parker's power wagon is parked on rolling slickrock high above the distant desert floor. Near here is the prehistoric ruin.

Bottom—George Parker begins his descent into the canyon of the ruin. Tires prevent the steel cable from cutting into the soft sandstone.



AUGUST, 1957

and reach a point directly across from the ruin. We also discovered a sloping ledge which offered a possible route on the level of the ruin—if and when someone could be lowered onto it.

More satisfying, we had an opportunity to look at our cameo-like cliff ruin, sheltered in the arched cove. Seeing it so quiet and desolate, it was hard to believe that at one time the narrow canyon echoed to voices and stone hammers, and that busy figures somehow clambered down to the canyon floor where a seep suggesting a now buried spring supplied water for the little community. The locale seemed more suited for an eagle's nest than a human habitation.

No roof poles showed and portions of the cave ceiling had fallen, smashing the walls of the houses. What may have been a round kiva or ceremonial chamber was conspicuous at the front, more as an excavated pit than a room.

Even with field glasses we could not distinguish a sign of man-made footholds or a sloping approach which might have served as a path over the walls—not even a break in the rocks where such a path could have fallen away.

That night after dinner we sat before the fire at Rough Rock and planned the final assault. In Commando-raid fashion, every member of the party received an assignment to a specific duty, and every possible mishap was considered.

By mid-morning of the next day we were in position at the canyon rim. The power wagon was on the peak of a rock swell 500 feet above the edge. Art Greene warmed the engine that operated the winch while George fastened himself into the boatswain's chair at the end of the line, and then slowly retreated down the sloping slickrock to the rim.

Old tires, cut in half and wired together, were suspended over the soft sandstone to keep the cable from cutting into it. Two guide ropes were looped over a projection of rock to hold the cable straight.

Joe was posted across canyon where he had started taking pictures and could watch George's descent and signal for the cable to be raised, lowered or stopped as necessary. Bill, at the point where the descent would be made, was to relay Joe's signals to Art and me high above him.

George was slowly easing toward the edge. I stood at the winch where I could watch the uncoiling wire and still see Bill's hands. Raised above his head, they were moving in a continuous circle which meant "let it down," and across the gorge, Joe's hands moved with the same command.

Slowly the cable played out, the

Going down! George Parker, lowered over the cliff on a steel cable, has just reached the ledge which he will traverse to the cave of the ruins.



motor growled noisily and George disappeared over the red rim.

Our first relayed report was that George had reached the ledge. The winch was stopped and from Joe we knew the boatswain's chair was loosened and secured to a rock and our explorer was proceeding cautiously along the ledge toward the cave.

We waited for half an hour, assured by Joe that all was well, but impatient to have our curiosity satisfied. During the interlude I saw a solitary Navajo figure standing out on the desert floor and I considered what a puzzling sight we must have made for him. In another moment he disappeared, no doubt shaking his head over the unfathomable ways of the white man.

At last George told Joe he was ready to come up and the long slow pull began. The cable did not roll smoothly on its drum, and there were moments when the guy ropes seemed to be slipping—uneasy moments they were—but finally George's head appeared over the rim where Bill took him by the arm, and he was up and over.

When we had all returned to the car George told us what he had seen in the cave below. He found no clue as to the route by which the prehistoric dwellers in this cavern high up on the sidewall had gained access to their mud and stone pueblo. A lightly scratched date on the cave wall—"1926"—deepened the mystery. Thirty years ago a non-Indian had somehow gotten into the canyon and, according to George, "had gone through the place as though with a bulldozer." Certainly no authorized expedition or trained archeological party had been responsible for such depredation.

There were about 20 rooms, some built to the very ends of the opening. All were one-story and the highest walls were six feet high.

But, our adventure was not over. Just as we started to leave, five Navajo policemen appeared over a rocky swell, coming in our direction.

The Navajo I had seen earlier in the day apparently notified the officers of the strange activity he had seen from the desert floor and they were here to investigate.

In a way this gave us great satisfaction for it showed us that even in this uninhabited corner of Navajoland, the Indians knew when visitors were abroad and were prepared to see that ruins were not molested except under proper authorization from the Tribe.

We explained how we had been recording—not destroying—still another fascinating wonder of Navajoland.

Adventure, I can assure you, still waits on the desert and you can find it in the air, on the ground, or in between.



LIFE ON THE DESERT

Prayer Stick Vengeance

The ancient Indians had hidden their religious fetishes in canyon niches where they would remain undisturbed. But the author—like many other pot-hunters before and since—desecrated the sacred caches by removing the bowls and prayer sticks. Was the misfortune which followed the manifestation of angry gods?

By D. D. SHARP

DURING THE summer of 1928 I was sent as relief agent to an isolated railway station about a mile and a half from an Indian pueblo. Here the railway winds through a deep gorge with an eroded tableland so high above it that the full moon seemed to be a brazen shield resting on the rimrock, while deep in the canyon drums throbbed throughout the night.

Mysterious desert nights and the endless beat of pueblo drums have always mesmerized me with a sense of unreality, as do painted priests chanting ancient prayers as they emerge from the round-walled turrets of underground temples.

Nightly I listened with interest, but I had no belief in the power of a medicine man's curse or benediction, nor in the sanctity of prayer sticks or efficacy of sacred meal. With usual white man brashness, I invaded forbidden areas and pilfered relics I considered abandoned.

Across the tracks from the depot was such a place. Here a sandstone wall towered from a talus of dirt and rubble where the Ancients had dwelt in primitive caves. I often explored this place and gathered many artifacts. One day my wife and I found a steep path to the tableland above and we climbed it with clandestine caution. The flat mesa was cleft by many deep narrow crevices and in most of them we could dimly see beautiful bowls, some containing prayer sticks—small round pieces of wood bound with feathers—and meat offerings.

Vaguely we had heard that there was a curse against anyone who disturbed them, but to us it was superstition and nothing to worry about. With a fishing line of string and hairpin we lifted the bowls out of the ground. We secured a nice collection of pottery that day and many prayer sticks. Of

course this was in the early days before enactment of laws restricting the removing of artifacts.

We packed our new treasures and expressed them to Albuquerque where they were received and taken to our home in the Sandia Mountains.

When my relief duties at the railway station were completed, we returned to our mountain home and made a new niche in the adobe walls to display the newly acquired artifacts, while I boasted of the ingenuity we had used to recover these trophies.

Soon after my return I was suddenly and unexplainably stricken. The railway doctors gave me a hopeless verdict. I was finished, incapacitated. I was ordered to go home and drag my cot out in the shade and become a permanent invalid. I refused their decree, but soon discovered there is a limit to the power of the human will.

Even during those long bleak hours of meditation and worry as I lay in

bed, it did not enter my head that my illness might have been caused by a pagan curse.

That same year my wife took ill, far more grievously than I. In the months she lingered with me, the 1929 financial panic hit the country. Hospitals and doctors were costly, the value of my property fell. I sold some acreage for a tenth of its original value, but there was no alternative.

One quiet night when all the cabin lights on the slope were out, I sat with my head on her bed. "You know," she said, "I have been thinking of those prayer sticks. I want you to get rid of them."

Coming from her these words gave me a jolt. She was the calm sensible type. I lifted my head and met her sweet serious eyes, and my gaze fell to her pale cheeks, hollowed with great suffering. I wondered if she was rational, or speaking from fright of some nightmare or delirium.

I tried to smile at her, but couldn't. "Sure," I promised.

Next morning I lifted them from their niche in the wall, but I didn't destroy them. It came over me that I must not do this—not because they were beautiful and valuable, but because I had become afraid of them, afraid to surrender to superstition lest I be assailed by another and another until my whole life would be ridden with one taboo after another. So I returned them to the niche and explained my reasoning to my wife. She did not protest.

"We're not children," I asserted grandly, "it's against all reason to believe those inanimate sticks have caused our troubles."

A few weeks later, she who was so much to me, passed away. And when I was alone I began to doubt, to believe, to feel recurring futile remorse



for not having done what she had asked.

Yet I did not, even then, destroy the sticks. I defied them to do anything worse to me than they already had.

I lost my home, became bitter against old friends—every decision I made was wrong. If I turned left, escape was to the right. If I waited, I should have hurried ahead. And so I sank deeper and deeper into disaster. The bank, where I had deposited my small remaining cash, failed. The man who had promised me employment that my physical abilities were capable of performing, suddenly died of a heart attack. And finally, the irrigated garden I relied on for sustenance was flooded and ruined by a neighbor's

negligence.

N. Howard (Jack) Thorp, who wrote "Little Joe the Wrangler" and other cowboy songs, offered his help. "Everywhere you turn," he said, "you are reminded of your losses. I have a cabin on the beach near Port Isabel. Go down there. Get away from here and begin all over with new factors, new friends."

I left Albuquerque on August 20, 1933. On September 4 the worst hurricane in history carried off Jack's cabin and I escaped without a change of clothes.

The next day as I stood on the desolate wreckage-littered beach searching for intimate keepsakes and finding none, feeling overwhelming helplessness,

a thought struck me that lifted my spirits to a remarkable degree. The bowls and prayer sticks! The sea had taken them too! If indeed my misfortunes had been their curse, now I was free!

From that hour to this, losses have been made up to me. I have a nicer home in the Sandia Mountains and a larger acreage. I am married again, and very happily. My decisions are largely fortunate. My friends have been tested by adversity. Life is good and filled with promise.

Oh yes—Indian bowls, baskets and dolls decorate our new house—and they are beautiful, but they were purchased from Indians who made them for sale.

LETTERS

Protests No Campfire Rule . . .

Chula Vista, California

Desert:

With all respect to our California State Park system and its efforts to preserve the natural beauty of our deserts, I find it extremely agitating as a person who has camped in the outdoors most of my life, to be confronted by a Park Ranger in some isolated spot and told that campfires are not allowed.

What makes an outing complete? A fire to gather around in the evening, to sing by, chat with your children, roast wieners, warm yourself on an especially cold evening, or to sit quietly, looking at the dying embers after the children are all tucked safely away in their bed rolls, meditating on the richness and fullness of the great outdoors.

What good is camping without a campfire? Can you gather a group of people around a gasoline stove and expect the same results that a campfire produces?

And the park authorities will not even let you bring in your own wood! Heaven help us if the state park system is extended over to the Colorado River.

REY BARNHART

Dear Rey: I am afraid you are going to have to begin adapting yourself to a changing world. The old rules were all right in the days when population was sparse and few people camped on the desert. But those days are gone—probably forever.

The statisticians are predicting 200 million Americans by 1975. And that inevitably will mean increasing regimentation for you and me. One person can live on an

island in perfect freedom. But if 999 more move in, then there has to be some rules to safeguard the rights and privileges of all of them. Put 100,000 on the island — and that really will be rough on those rugged individualists who cannot adjust themselves.

We are heading in that direction in the good old USA, including the desert. So just thank the park ranger for being so courteous about it—and next time go a little further out on the desert — beyond the rules which the ranger must enforce to insure protection for you and me.
—R.H.

Desert Treasure Awaits Him . . .

Haverford, Pennsylvania

Desert:

In the mid-1920s I used to prow around the desert in Imperial Valley and the pull of the desert has never left me. When life reached the point where tempers were short and the world took on a bluish tinge, I went to the quiet lonesome places where humans hadn't left their disturbing marks. I was always healed and when I returned to my fellows the world seemed a lot different, but no better. Here in Pennsylvania I still dream of the day when once again I will renew my spirit out there.

In those days there were no rock-hounds and when one roamed he had the feeling that it had been many years since a human had been there before him. From what I read in *Desert*, it is not like that now—yet there is one place I stumbled on that I hope no one has gotten to. It has remained in my mind for the past 30 years.

Out on the desert in a wash bank, two men had made a dug-out in the dry hard clay. Inside was a small crude table which was set for two—knife and fork, a tin plate and cup, on each side of the table. When I picked up one of the knives the

wooden handle turned to dust. Under a very small iron stove was a pair of old high-topped shoes which were so dried out the leather broke off in small pieces. Inside the oven were two dried ears of corn.

Up the ravine I saw why these men had lived here. The clay sides of the ravine were laid bare to gray rock. I picked up a piece and it was heavier than common rock. I found no old tools lying around.

For the past 30 years I have dreamed of returning, hoping that no one followed my earlier footsteps.

I am 62 years of age and in three short years I will be getting my social security checks. My wife and I have been making plans to live somewhere in southern Arizona. When that day arrives we will get settled and then drive over into Imperial Valley and I will see what has happened to my discovery.

I wish to express my gratitude for making it possible to keep fresh in my heart the wonders of God's great desert.

NELSON B. POWELL

Directions to Four Corners . . .

Riverside, California

Desert:

Recently, my companion Larry Decker and I drove to the Four Corners Monument where Utah, Colorado, Arizona and New Mexico meet.

Thanks to an increase in uranium and oil prospecting there are many good roads in this area today. We started from Tes Nos Pas, Arizona; drove east for 1.2 miles then turned left. At 3.5 miles we made another left turn onto the unmarked road to Four Corners.

Four hours and 20 miles later we found the marker—a two-foot high cement pillar on a flat area the size of a city block.

JACK HARRIS

MISSION SAN XAVIER

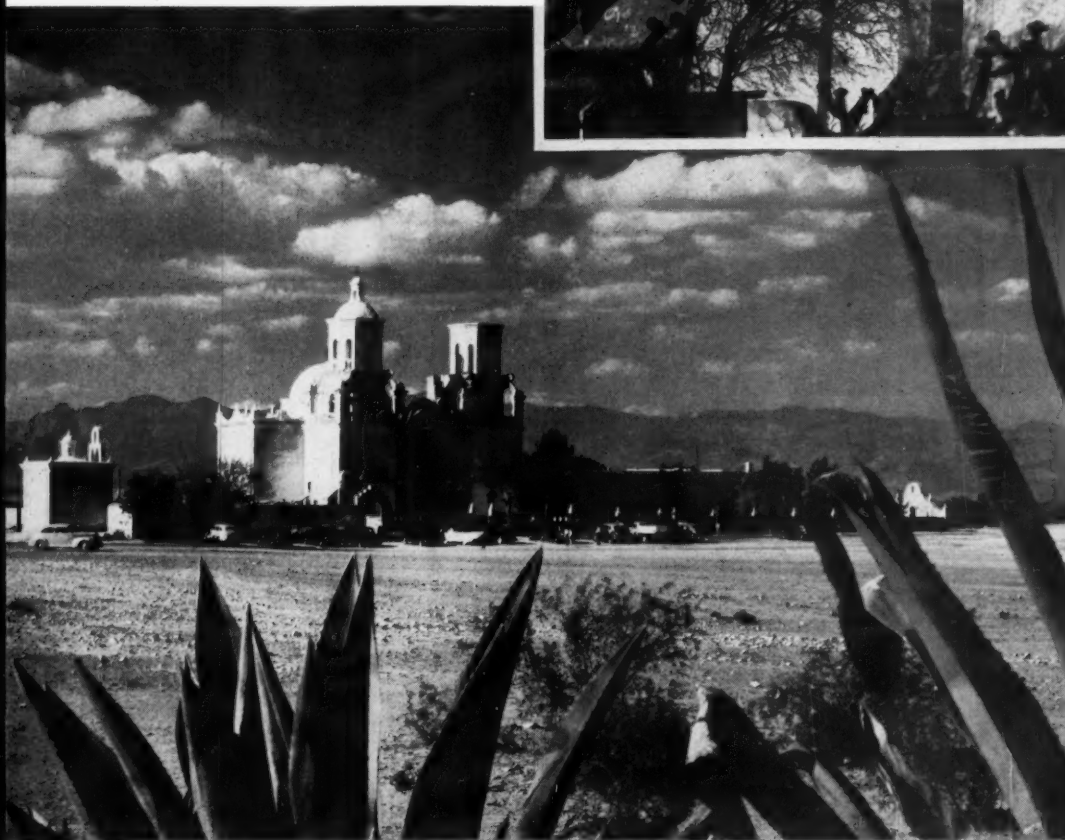
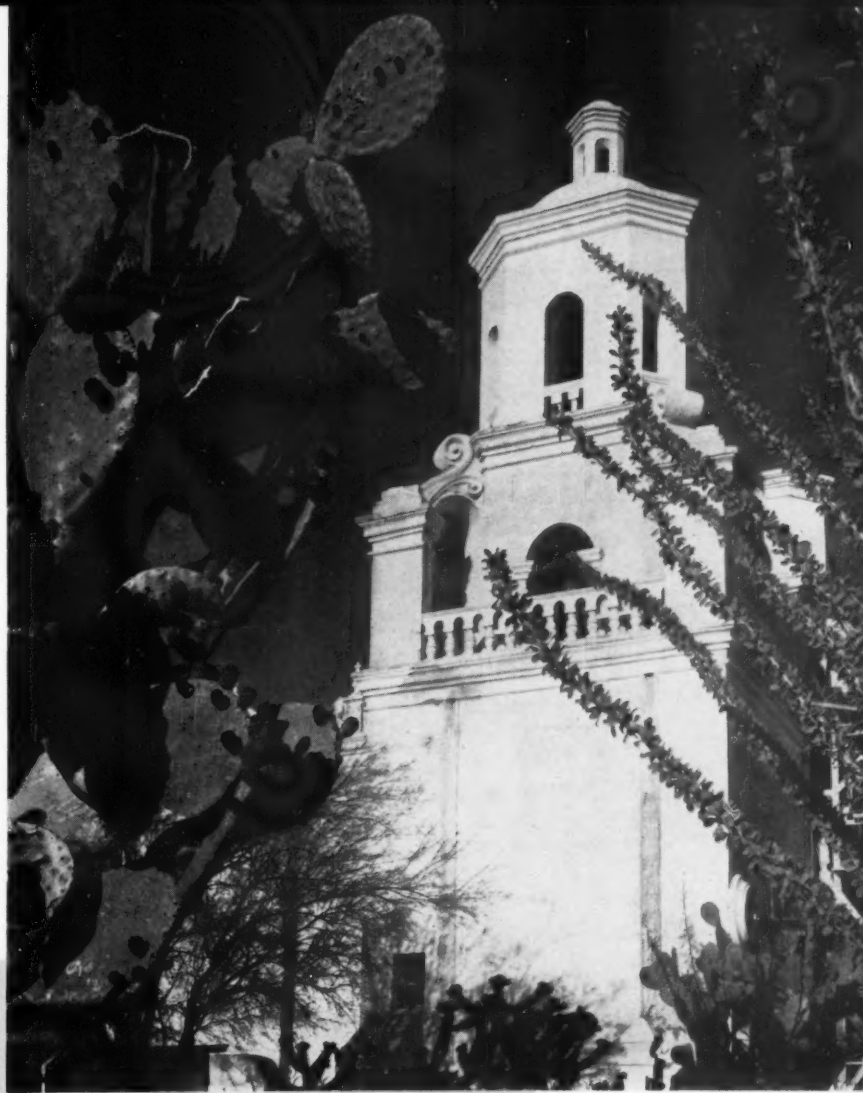
By JOSEF and JOYCE MUENCH

Father Eusebio Francisco Kino founded Mission San Xavier del Bac—the “White Dove of the Desert”—in 1700, but the present structure was not dedicated until 97 years afterwards.

It stands on the Papago Indian Reservation in southern Arizona and was built to serve both a spiritual and mundane purpose—to Christianize the Indians, and to serve as headquarters for a great ranch which was to be worked by them.

The mission was abandoned several times because of hostile Indians. Restored in 1906, the present design exemplifies the late Spanish Renaissance architectural style and was built largely by Indian workers. It is an amazing structure, considering the materials available, with its ornate facade and the arcaded and buttressed bellfries. Unlike most of the missions of its period, it still is serving the Papagos under the rule of the Franciscan Order.

Located only seven miles from Tucson, it is one of the most widely visited landmarks in the area.



She Paints With Gem Stones

By NELL MURBARGER
Photographs by the author

FRAGMENTS OF desert stone, shaped with a pair of pliers and fixed to a plywood foundation, may not suggest an art form worthy of blue ribbons, but Josephine Roberts' great sense of artistry and endless patience have made it just that. For the past nine years, the unique "Studies in Stone" created by this Nevada ranch woman have been claiming first awards wherever shown in competition; and in 1955, at the exhibition of the California Federation of Mineralogical Societies in San Francisco, her exquisite

The beauty in stones has been admired by man from the beginning of time. And now a Nevada ranch woman, Great-Grandmother Josephine Roberts, has combined the ancient arts of sandpainting and mosaic setting with modern art forms to create a striking new method of illustration.

arrangements not only carried off first award for special exhibits, but literally stole the show!

Each petal and leaf in this elaborate bouquet was hand-shaped from native Nevada agate and gem stones by Josephine Roberts.



Jo Roberts' idea of "painting" pictures without benefit of paint is the outgrowth of her lifelong interest in the many attractive stones in the vicinity of Duckwater, Nevada, where her people have lived for over a century—her great-grandparents having settled here soon after the 1849 California gold rush. Josephine's mother was born and reared in Duckwater Valley, as was Josephine and her five daughters and two sons; and now, 10 grandchildren and sundry great-grandchildren make, in all, seven generations of her family which have lived in the Valley.

Even as a child, Josephine was attracted to the colorful stones she saw while riding horseback after cattle, and throughout her girlhood she seldom returned from a desert ramble that her dress wasn't sagging with rocks. After her pockets were filled to overflowing, she even would rip a tiny opening in the two-inch hem of her skirt and feed more stones into this convenient storage space—a practice not wholly appreciated by her mother.

In 1910, Josephine met and married Frank Roberts, a young engineer from Philadelphia who was running the survey for a projected railroad between Ely and Tonopah. After their marriage Frank and Josephine settled on their present ranch in Duckwater Valley, and Jo initiated her new husband into the spare-time pursuit of agates and arrowheads. "Spare time," however, is not exactly a surplus commodity among folks who are rearing seven youngsters and operating a Nevada ranch 130 miles from their county seat, and it was not until after the Roberts had become great-grandparents several times over that Josephine found time to fully indulge her love of pretty stones. Oddly enough, it was Nancy Snyder, her youngest granddaughter, who started Josephine on the hobby that has since brought her many hours of fascinating work, scores of new friends, encouraging financial return, and commendation by art lovers throughout the country.

Since prehistoric times, the warm springs that feed Duckwater Valley have made it a favorite haunt of Indians who camped and hunted there in great numbers. As a result, arrowheads were found in the valley in unusual numbers, and on the walls of the Roberts' home hang several frames of beautifully-wrought 'points that they have collected. With time's passage, arrowheads became few, but still plentiful are the small flakings of agate cast aside by the 'point makers.

Clean, translucent and of many hues, these discarded arrow chips are fascinating to everyone who sees them, and when the Roberts family went in search of arrowheads and agates, Nancy and her grandmother invariably brought home hundreds of these tiny rock fragments. With supper over and the ranch chores done, the arrow chips gathered that day were spread on the kitchen table and the family members would finger and admire the neat little flakes whose texture is so like fine porcelain and whose colors seem to embrace all the vivid and pastel blendings of desert noons and nights.

Nancy's sandhill treasures one day included a handful of bright yellow chips, and when she and the family were looking at them that evening, her grandmother idly arranged these little rock slivers into a crude sunflower, with a round brown chip for a center and two green leaves. Delighted with the "flower" fashioned from her stones, Nancy insisted that it be glued to a piece of cardboard so that she might keep it.

In that crude design made to please a child, the artistic eye of Jo Roberts glimpsed the germ of an idea and the next day saw another "stone picture" fashioned—a picture less crude than the first.

Although her efforts continued to improve with practice, Jo Roberts' artwork remained essentially rough until she found that the agate chips could be shaped to her special requirements by tooling their edges with a pair of ordinary cotter-key pliers. With this discovery, latent possibilities of the hobby burst into full bloom, and no day held so many hours that Jo couldn't have filled them all with experiments she wanted to try and pictures she hoped to create.

In her first "Studies in Stone" of professional quality, Jo arranged the shaped agate chips into sprays of mixed flowers which were affixed to pastel-hued cardboard and plywood foundations. Artistically and neatly arranged, even these early efforts gained for their maker several first awards from the Nevada Fair of Industry at Ely, and the Nevada State Fair at Fallon. As her skill increased, however, she found that not only the main subject matter but also the full background of the pictures could be wrought in stone by pulverizing rock of the proper tint and then sifting it to assure uniformity.

After the desired design has been pencil-sketched on canvas or plywood, Mrs. Roberts—like any artist working in more conventional media—begins with the most distant part of the pic-



Great-Grandmother Roberts with some of her prize-winning Studies in Stone.

ture and moves forward, creating first the sky, then clouds, distant mountains, hills—and then the main subject matter in the foreground. Taking each section of the scene in its proper turn, she coats that one area with a strong quick-adhering glue, and over this surface sprinkles the sifted rock powder. Many of the sand grains, naturally, fall beyond the boundaries in which they are wanted, but by turning the picture face down and tapping sharply with the fingertips, all unattached grains are shaken free and only the glue-coated section remains covered. Soon as one color is in place, glue is spread upon another area and powdered rock of a different tint or shading is applied.

Upon reaching the main subject matter in the foreground, where minute detail is important, Jo Roberts turns to the agate chips, shaping each tiny piece of stone to fill its individual need, and fixing each individually in place. When one considers that few of these hand-shaped bits of agate are larger than the head of a match, and some no bigger than a pencil dot, the limitless extent of this ranch woman's patience and artistry becomes apparent.

Working as slowly as the mills of the gods are reputed to grind, Mrs. Roberts has created pictures of almost every subject except human portraits. One of her loveliest pictures, the sub-



Frank and Josephine Roberts enjoy a camp meal while on a desert outing near their home in Nye County, Nevada.

ject of enthusiastic acclaim and winner of blue ribbons wherever entered in competition, is of a Japanese azalia tree in which each petal used in the many scores of tiny flowers is hand-shaped from agate chippings in the same delicate shade of pink. Each flower is fitted with its correct complement of yellow stamens—and even these are wrought from minute specks of stone. Mrs. Roberts devoted 1500 hours of close painstaking work to this single creation.

Most difficult picture she has made—at least insofar as matching colors is concerned—is of a dwarf Japanese plum tree in full bloom against a sky-blue background. Varying tints of brown petrified wood, arranged to give shadings of natural appearance, form trunk and branches of the tree, and each petal in the many dozen tiny flowers is a clear milk-white. White flowers might seem a simple matter in a world full of white rocks, but agate chippings from Duckwater contain many shades of white, and for her plum blossoms Jo Roberts could use no stone having even the slightest off-color tint. As a result, she often rambled over the desert throughout an entire afternoon without finding enough white chippings for more than one or two petals of the many hundreds needed to fashion this lovely tree.

Other notable pictures she has made from rocks include one of broken wagon wheels beside a desert trail, mallard ducks on a pond, a rearing horse, water lilies on a mountain lake and a jungle tiger.

Some other stone colors are as hard to find as pure white. Sky blue, for instance, is scarce, as is the clear bright green needed for leaves. Under no circumstance, however, does Mrs. Roberts resort to artificial coloring, and only once did she use colored glass.

"Since it is made from silica sand, even man-made glass is a product of the earth, and I argued with myself that it would be all right to use it. But I never felt right about it," laughed Jo. "Every time I looked at that picture and saw the colored glass I felt as if I had cheated—and I never used glass in my pictures again."

Jo Roberts' work enjoys the staunch support of her entire family. Every member of the clan is firmly convinced that Jo's work would be a challenge to any of the old masters. Husband Frank and daughter Mabel climbed on the bandwagon several years ago by purchasing complete lapidary equipment. Installed in their home and operated by gasoline-generated electricity, the outfit has produced some of the most beautiful cabochons and slab material in the state.

Despite remoteness of its location—135 miles from Tonopah and 65 miles from Ely—the Roberts' ranch attracts visitors from every part of the nation and from every walk of life. Regardless of what they come seeking in the way of natural desert attractions, the Duckwater vicinity usually can supply it. The 100-square-mile area around the Roberts' home probably contains a greater variety of gem stones than any other in the country. Here are located jasper, opal, fluorescent chalcedony, geode and crystal fields, fossils of a dozen varieties, abandoned mines, ghost towns, volcanic craters and lava beds, the eighth largest meteor crater in the world, Indian petroglyphs and graves, emigrant trails and campsites, and dozens of other points of interest which Frank and Jo delight in visiting and exploring.

But, despite all their searching in the past 45 years, the Roberts have never succeeded in locating the source of the beautiful agate used in the arrow chippings still so plentiful in the valley. So long as this deposit remains lost, Frank and Jo will have a wonderful excuse to ramble over the hills—and so long as she is able to make these trips, Great-Grandmother Roberts expects to go on gathering agate chips and creating more beautiful Studies in Stones.

ON DESERT TRAILS WITH A NATURALIST -- XL

Parasites of the Desert World...

There are no villains in Nature's eyes, for all of her children must live as best they can. Plants that take their nourishment from other plants may not be regarded as among the desertland's most praiseworthy inhabitants, but they are interesting and often beautiful members of the flora.

By EDMUND C. JAEGER, D.Sc.
Curator of Plants
Riverside Municipal Museum
Drawings by the author

ONE HUNDRED and fifty years ago Sir Stamford Raffles, English governor of Sumatra, in company with botanist Dr. Joseph Arnold, discovered the largest flower in the world while exploring the tree jungles of that island.

It was a fungus-like plant with no proper stem (only a superficial rhizome), no leaves and but a single three-foot wide, 20 pound flower lying flat on the ground. There were no petals on this astounding flower. Five

thick-lobed flesh-colored sepals surrounding a circular central cup a foot in diameter, took their place. A strong odor like that of putrid flesh attracted flies which carried on the work of cross-fertilization.

Close examination revealed that this "all flower" plant was a parasite on the stems and roots of the tropical vine called *Cissus*. This amazing parasite plant was named *Rafflesia arnoldi* to honor its two discoverers and placed in a special family of its own, *Rafflesiaceae*.

An American botanist, George Thurber, found by contrast the smallest flowering plant in the world — and strangely enough it was a member of that same family, *Rafflesiaceae*. Thurber was collecting plants in arid southern Arizona below the Gila River near its junction with the Colorado, when he noticed on the purple-gray stems of a leguminous *Dalea emoryi* shrub numerous small dark brown scaly nodules each about the size of a grain of barley. They were stemless, leafless parasites consisting almost wholly of a flower made only of scaly sepals surrounding a short club-shaped or sperical central part. The unique pygmy among plants was named *Pilostyles thurberi*.

This midget parasite which flowers in April has since been collected in western Imperial County in California. Recently Lloyd Mason Smith brought me some specimens he found growing on shrubs on the borders of sand dunes about 75 miles south of the International border on the road to San Felipe in Baja California. Last December I saw it on the barren rock and sand deserts in extreme northwest Sonora.

One of the mysteries concerning *Pilostyles* is its means of propagation. How do the numerous exceedingly small seeds get on the rather smooth bark of the host plant? What causes so many of them, once on the bark, to remain there until favorable conditions arise for their germination? How does the tiny embryonic plant, which appears like a mere microscopic thread, penetrate the tough dalea bark so its haustoria—the small highly specialized roots—can get nourishment from the foster parent? These are fascinating

problems for some young naturalist to solve.

Among desert plants of the morning glory family (*Convolvulaceae*) are those curious parasites, the dodders or love-vines. They are wholly destitute of chlorophyll, except in the embryonic stage, and attach themselves to their host plants by twining their numerous thread-like orange or yellow stems about them, and then penetrate the bark with their haustoria.

Orobanche



Dodder



By means of these specialized organs of absorption they take up water and other nutritive materials they need. In the spring of the year when the shrubs are full of sap and have tender shoots, the dodders (called *Cuscutas* by the botanists) are conspicuous because of their tangled leafless filiform stems which in large masses are draped over and among the stems of such desert shrubs as brittle-bush, creosote, cheese-weed and rabbit brush. The most common of these is the lemon-yellow *Cuscuta denticulata*. It is widely spread on both the Great Basin and Sonoran deserts.

On shrubs adapted to saline soils, such as grow on the margins of dry lakes — saltbushes, iodine bush, inkweed and Russian thistle—grows a desert dodder called *Cuscuta salina*. Unlike other dodders it is unique in that it is able to thrive on saps rich in salts and alkalies. Its small white flowers, shaped like shallow bells and arranged in close clusters, give rise to numerous conical capsules, each with a tiny black seed within.

Last June while traveling over the rough and stony desert roads just north of Calmalli in the mid-peninsula of Baja California, I came onto a great thicket of elephant trees (*Desert, Nov. '56*). From a distance they had a strange appearance and as I drew nearer I could see that there were large clumps of gray material scattered about on the tortuous leafless branchlets. These were huge masses of dried stout stems of a dodder. It was the same kind of love-vine which Dr. T. S. Brandegee had first observed on the newly discovered elephant tree, *Veatchia discolor*, many years ago. Accordingly he named it *Cucurbita Veatchii*. The dodder plants I saw had doubtlessly infested these trees during some long ago rainy season and during the subsequent years of drouth still hung on in their dried state. Just how this parasite gets a foothold on the very smooth annually-shed bark of the elephant tree is a question no one yet has answered.

The seeds of some *cuscutas* germinate on the ground, others on the branches of the trees and shrubs they parasitize. In neither case do the young seedlings have functional roots. When the filiform embryo, which is spirally coiled in the fleshy albumen of the seed, breaks forth it immediately begins to move about in its efforts to find a host. If the search is at first unsuccessful the seedling is still able to grow and creep a short distance farther at the expense of the nourishing material drawn from the other extremity of the filament which dies off as the growing end lengthens.

Of all strange appearing desert plants there are none that pique the curiosity more than the fleshy-stemmed broom-rapes or orobanches and the cancer-roots or pholismas.

After winter and spring rains or sometimes after summer cloudbursts of major proportions, we see the orobanches thrusting their thick fleshy amethyst-colored flower shoots upward through the sands and generally close to some shrub from whose roots they steal nourishment.

Even as they poke their scaly heads above ground they begin to bloom, the



Pholisma

purple flower buds having begun to form sometime before emergence. The desert-dwelling Indians used to pull up the six to eight inch stems and roast them on a bed of creosote coals. They found them both palatable and nutritious. The late Dr. Walter T. Swingle told me on a number of occasions of seeing the Colorado Desert Cahuillas using them, and he felt that some day we too probably will realize their food value.

The very fast growing orobanche has no leaves and no chlorophyll. The stems are covered with large elongate scales and the purple gaping flowers, arranged in a spike, are more or less curved, the upper lip two-lobed. Soon after flowering one sees the large globu-

lar seed vessels, each with an unusual number of small black seeds. When ripe they are scattered far afield by wind, water and other means. To germinate, these seeds must somehow get beneath the soil, perhaps through cracks, to the roots of the host plants. Secretion from these roots provide the stimulation to cause the seeds to start growing. *Orobanche cooperi* generally is found as a parasite on burro-weed (*Franseria dumosa*). Occasionally it attaches its suckers to the shallow roots of barrel cacti or cholla.

Recently, it was discovered that orobanche is parasitizing tomato plants in the Coachella Valley of California. Here it has the potentiality of a baneful agricultural pest for millions of young tomato plants are sent from this area for propagation in many parts of the United States. Agricultural inspectors are much concerned about letting the growers ship out their product lest they spread this serious parasite to other regions.

Not so large but no less odd in appearance is the handsome purple-flowered Colorado Desert cancer-root, *Pholisma arenarium*. It too is a root parasite and without green coloring matter. The thick brittle watery stems often are multiple and so we see compact groups of the elongate conical flower heads. Each flaring tubular flower has a conspicuous creped white border and is split into five to seven lobes. The seed vessels open to release numerous one-seeded nutlets. Although having many superficial resemblances to orobanche, pholisma is not even closely related to it. It is parasitic on roots of cheese-bush (*Hymenoclea*), verbena (*Abronia*), rabbit brush (*Chrysothamnus*) and some of the wild buckwheats.

Closely brigaded with pholisma is the unique sand-food, *Ammobroma sonorae*. It parasitizes several of the perennial plants of the great sand dunes of northwestern Sonora and adjacent southeastern California. Each plant consists of an elongate simple stout stem which comes up from the root of its host through five or six inches of sand and ends at the surface as a close-sitting thick grayish velvety saucer-shaped or button-like head, thickly dotted with small purple flowers. This flower head may be one and one-half to five inches across. So well does it match the color of the sand, it may go entirely unobserved.

The Yuma Indians who lived near the head of the Gulf of California eagerly sought out this plant. After boiling or roasting, it is very sweet with much of the flavor of well-baked yam.

When in early spring our travels

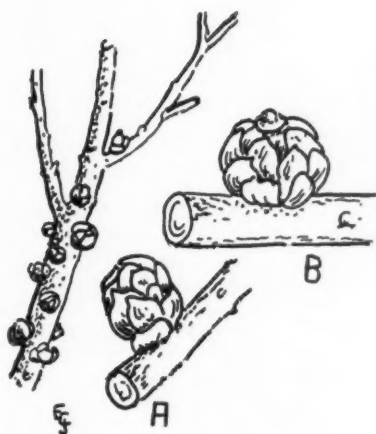


Castilleja

take us into upland brushy areas of rocky desert terrain, we often are delightfully startled by flashes of brilliant red along the way. The Indian paintbrush (*Castilleja*) has come into flower and for many days will lend its cheerful touch of color. However, it is not the flowers that are red, but the incised floral bracts or modified leaves at the bases of the rather small yellow or purple-lipped flowers.

The stems of paintbrushes are found near to or mingled with the branches of low shrubs. This is because they not only need protection of the stiff twiggy branches, but also because they spring directly upward from the roots of the shrubs which they parasitize. From the host's roots they take only water and minerals. Actually, they are only semi-parasites since they manufacture, with the aid of the chlorophyll in their stems and leaves, most of the sugars they need.

There are many kinds of paintbrushes and almost all are showy. They are browsed both by cattle and sheep. One species, *Castilleja chromosa*, is said to be deleterious because it takes up considerable amounts of poisonous selenium from the soil. The Hopi Indians eat the flowers of one of the mountain species and they also use the plant in ceremonial rites. Most of the paintbrushes are herbaceous perennials.



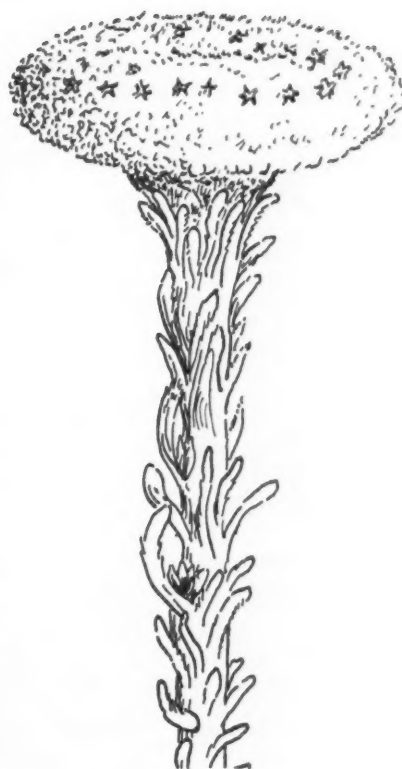
Pilostyles. A: enlarged male flower; B: female flower.

nials. The generic name *Castilleja* honors the Spanish botanist, D. Castilleja.

Mistletoes, especially certain kinds with leaves reduced to mere scales, are among the stranger parasitic plants of our deserts. The California mistletoe, *Phoradendron californica*, with its reddish leafless often pendulous stems and coral-pink to white berries, is confined mostly to leguminous trees such as honey mesquite, screwbean, catsclaw, ironwood and palo verde. Occasionally it is found on the branches of creosote and ocotillo. The infestations in honey mesquite and ironwood are often so severe that the trees eventually are killed. In ironwood trees the mistletoes often cause the formation of huge spindle-shaped tumors weighing many pounds, even up to a hundred or more. The fusiform swellings are especially noticeable when the limbs become devoid of leaves, their vitality having been sapped by the parasite.

In the desert mountains another mistletoe, *Phoradendron densum*, forms compact ball-like clusters in scrub junipers. It is a handsome species with elongate green leaves and is confined to California and Oregon. In Arizona, west Texas and Sonora, a mistletoe, *Phoradendron macrophyllum*, with well-developed large green leaf blades, grows in great masses on the smaller limbs of Fremont's cottonwood. Having green leaves it can make some of its food, supplementing its diet by taking water and minerals from the trees on which it grows.

Some good must be said of mistletoes. They supply food and drink to several desert birds, among them the aristocratic phainopepla and handsome Gambel quail. In many of the desert places this may be the only source of water and much of the food these birds



Ammobroma

get in summer, autumn and early winter. The birds return the favor by distributing the mistletoe seeds.

WRITE TO WINSLOW C OF C FOR SNAKE DANCE DATES

This year's Hopi Snake Dances will be held at Walpi on the First Mesa and Mishongnovi, Second Mesa.

Exact dates for the dances, usually held in late August, will be set by the Hopis 16 days prior to the event. *Desert* readers who would like to be notified by mail of these dates can write to the Winslow Chamber of Commerce, Winslow, Arizona, which will forward this information as soon as it is released by the tribal leaders.

Auto caravans will leave the chamber office at 9 a.m. each morning of the dance and chartered bus trips are being arranged at a round-trip cost of \$5 per passenger. Bus and motor caravans will return to Winslow immediately following the dances and are expected to be back at that city at 7 p.m.

Photographing the ceremonials is not permitted, but many camera subjects await the visitors enroute to the dances. A box lunch, hat and a pillow to sit on are suggested items to take on the trip.

THE *Desert* MAGAZINE CLOSE-UPS

Richard V. Van Valkenburgh, for many years a writer for *Desert Magazine*, died following a heart attack at Window Rock, Arizona, where he was in the service of the Navajo Tribal Council, in June. Funeral services were held at Ft. Defiance June 21. He was 53.

When *Desert Magazine* was started in November, 1937, Van Valkenburgh was an anthropologist in the employ of the U. S. Bureau of Indian Affairs at Ft. Defiance. He immediately began submitting manuscripts for publication, and his knowledge of Navajo history and his close contact with the tribesmen gave his stories an exceptional interest. During the 11 years from 1938 to 1948 he supplied material for 39 feature articles for *Desert* readers. He spoke the Navajo language, and his interest in the Indians was so genuine he soon gained their complete confidence.

Leaving the Indian Service in 1944

he moved to Tucson where he was engaged in newspaper, radio and research work until 1951 when for a year he made his home in Santa Barbara.

In 1952 the Navajo Tribal Council established a legal and research department preparatory to the filing of a claim against Uncle Sam for lands and rights which they believed had been taken away from them in the settlement of western United States. Van Valkenburgh was offered a position as chief archeologist for the tribe, and within a few months had several field parties carrying on surveys and research to determine the extent of the original holdings of the tribesmen—before the present reservation was established. More recently he was supervisor of land use and survey for the tribe.

With offices at Window Rock, he continued in this and similar work for the Tribal Council until his sudden death. His passing is mourned by both the tribesmen with whom he has been closely associated, and white friends everywhere. His widow, Ruth Van Valkenburgh, who has been a valued associate and secretary, plans for the present to remain at Gallup and Window Rock. Burial was in the Navajo Cemetery.

Born in Texas and moving to New Mexico when he was 21, D. D. Sharp, author of "Prayer Stick Vengeance" in this month's magazine, has lived in the Southwest most of his life.

The move to New Mexico (Clayton) was to homestead 160 acres of land, which he later gave back to Uncle Sam after he had become "rich in experience and down to a dollar and fifty cents" in cash. Sharp then went to work for the Santa Fe railway.

As he relates in his unusual true experience story, he is at present comfortably settled in the Sandia Mountains east of Albuquerque.

* * *

Perhaps no other resident of the Desert Southwest is as qualified to write about the planting of desert natives in the home garden as is Ted Hutchison, nurseryman at Calico. His "Red Blossoms in Your Desert Garden" appears in this month's *Desert*.

From 1946 to last year, he had his nursery at Barstow where he specialized in native plants. Recently he moved his business to the ghost town of Calico and added cacti and succulents to his stock.

His hobbies, besides plants, include rock polishing, branding irons, desert characters and tall tales.

Here and There on the Desert . . .

ARIZONA

Apaches in Water Fight . . .

McNARY—A superior court order issued on a petition of the Salt River Valley Water Users Association asking an injunction against the White Mountain Indian Tribe's building of a dam across Trout Creek apparently is being ignored by the Indians. The tribal attorney said government solicitors have advised the Apaches that no state or county court has jurisdiction in the issue. The Water Users obtained a similar court order last September, but the Apaches ignored it too. They plan to use the impounded waters for fishing and recreation.

Indian Incomes Taxable . . .

PHOENIX—Indians living in Arizona are subject to the state's income tax laws, according to a long-awaited opinion by Attorney General Robert Morrison. A tribal council also is liable to income taxes as a corporation, Morrison further ruled. Morrison suggested a friendly test suit "so that the courts can pass on this opinion . . . because this opinion will, without any question, be unacceptable to the Indian tribes."—*Phoenix Gazette*

Hunting Dates Announced . . .

PHOENIX—The state Game and Fish Commission recognized the growing importance of bow and arrow hunting by opening almost two-thirds of the state to archery hunts. Authorized was a pre-season bow and arrow hunt from October 12-27 in all of zone I, south of the Colorado River except for special game management areas in the East and West Sitgreaves Forest, Bill Williams and Mingus Mountain.

Temporary School at Damsite . . .

PAGE—Arizona's newest school expects to open next fall with 400 pupils whose fathers will be employed at Glen Canyon Dam. A temporary school building to house the pupils is planned, to be built with federal funds since the area is unorganized territory with no assessed valuation. As the town grows, a peak enrollment of 2000 pupils is expected.—*Arizona News*

Navajos Establish Record Budget . . .

WINDOW ROCK—The Navajo Tribal Council approved a record \$12,-201,231 budget—twice as large as the current budget and financed by the \$33,000,000 in oil and gas leases re-

cently obtained by the tribe. The new budget provides for a scholarship fund of \$5,000,000; \$1,000,000 for land purchases; and \$500,000 each for a tribal office building and community centers throughout the vast reservation. Other items include industrial and water development, farm training, and health and welfare grants.—*Phoenix Gazette*

Rules for Page Businesses . . .

PAGE—The Federal Government announced terms for operating businesses in the Glen Canyon Dam community of Page. The U. S. Bureau of Reclamation said firms seeking to open businesses in Page must first obtain permits to operate, then lease government land for construction of buildings. Applications for permits can be obtained from the bureau office in Kanab, Utah. Here are some of the rules: Only three permits will be issued for each general class of business during the construction period; exclusive permits will be issued for communications facilities, utilities and an airport; the general contractor will be permitted to operate a commissary, dormitories and mess halls; the government will not erect commercial buildings; off street parking required for all businesses; professional persons also must obtain operation permits.—*Phoenix Gazette*

Indian Land Development . . .

PARKER—The United Land and Development Company of Phoenix predicted that its planned \$30,000,000 irrigation development of idle lands on the Colorado River Indian Reservation will transform the area into a thriving economic unit which in only a few years will support 25,000 people. The concern promoted the idea of irrigation development of the lands which in turn has prompted the U. S. Department of Interior to seek bids for a 25-year lease on the lands.—*Phoenix Gazette*

Gulf Seaport Talk Hit . . .

WASHINGTON, D. C.—Periodic careless talk about a possible U. S. port on the Gulf of California hurts U. S.-Mexican relations, James Minotto of Phoenix and former mutual security administrator in Portugal, told a senate foreign relations panel. He said the Mexican people regard such talk as we would the Mexican government's asking for the purchase of a port like San Diego. In 1955 Arizona created a committee to study the establishment of a seaport in the vicinity of Yuma.—*Phoenix Gazette*

CALIFORNIA

Borrego, Anza Parks Merged . . .

BORREGO SPRINGS—The Borrego and Anza Desert state parks were combined on July 1 and facilities increased to make the area one of the largest state parks in the nation. There are over 425,000 acres in the combined parks to be known as the Anza-Borrego State Park. Clyde E. Strickler, supervisor of the park, said the new arrangement will provide more protection and better service and public contact in the two areas that are similar in terrain and recreational opportunities. — *Los Angeles Times*

Council Moves to Save Palms . . .

IDYLLWILD—Following the recent burning of Willis Palms the Desert Protective Council adopted a resolution designed to protect other desert palm oases from Biskra to the Chuckawallas in Coachella Valley. The resolution was wired to the state park commission and to state senators and assemblymen. In other action the council recommended to the State Fish and Game Department that golden eagles be added to the list of animals removed from the predator list. — *Desert Trail*

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Public Land Auctions Halted . . .

BARSTOW—Government sources disclosed that an immediate halt has been ordered to the direct sale and auction of government desert land parcels by the Bureau of Land Management. It was expected that the moratorium on the controversial auction method of disposing surplus government land in two-and-a-half and five acre parcels will continue until there has been a complete Congressional investigation. Meanwhile announcement was made in Arizona that 99 small tracts of land were auctioned off for \$75,580—a sum \$54,345 more than the appraised value of the properties.

Parachute Test Area . . .

EL CENTRO—A Navy spokesman said Imperial Valley should become the nation's one and only center for military parachute testing and developing. "There is no place in the world as well suited for parachute testing as the Imperial Valley," he said. At present, huge transports based at the Imperial Valley field are dropping two-and-a-half ton trucks, 155-millimeter howitzers and 20,000 pound tractors by experimental parachutes on the test grounds in the Superstition Mountains. — *Calexico Chronicle*

Navy Warns Rockhounds . . .

EL CENTRO—The Navy issued a warning to all rock hunters, curiosity seekers and junk collectors in Imperial County to give its gunnery, rocketry and bombing ranges a wide berth. The possibility of setting off live ammunition is an ever-present danger, the Navy said.—*Calexico Chronicle*

Salton Sea Gets Wildlife Food . . .

SALTON SEA—A shipment of shoal grass plants from Texas was introduced into the Salton Sea as part of a Department of Fish and Game experiment to help waterfowl hunting in the sea. The grass grows in shallow saline water along the Texas Gulf coast in conditions similar to those found in Salton Sea.—*Calexico Chronicle*

NEVADA

Navy to Activate Air Base . . .

TONOPAH—The Navy confirmed earlier announced plans to activate the old Tonopah air base for use as a

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I will sleep on a cot in the truck and the other two men will sleep in a 9'x9' umbrella tent that I will supply. We will go to mineralized areas and prospect for gold, silver, copper, mercury, lead, zinc, tin, uranium, thorium, barium, tungsten, manganese, chromium, titanium, vanadium, nickel, cobalt, lithium, beryllium, selenium, rare earths, gypsum, mica, asbestos, talc, jade, gem stones and anything else we can find.

Any net return we get from an ore deposit will be divided into quarters and one quarter will go to each of the three members of the prospecting party. One half of the fourth quarter will go to that member (any one of the three) who takes over the responsibility of staking out and recording the mining claim and doing assessment work on it and finding a buyer for it. The other half of the fourth quarter will go to the Salvation Army, the most reliable and kindly charitable agency with which I am acquainted.

I am 62 years old and not active enough to walk over two miles per day but I can supply equipment and plans and test all samples collected. I have a geiger counter, a gamma ray detector, an ultra-violet light for tungsten and mercury, a density balance, blow pipe chemicals, ore samples, field glasses, magnifiers, cameras, picks, shovels, hatchets, tools, tapes, compasses, an electric shaver, a typewriter, a gun, a gasoline stove, a lantern, a folding table, camp stools and dozens of maps.

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MAPS

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staging base for fighter plane gunnery practice over the adjoining 1,563,000-acre bombing range also being transferred from the Air Force to the Navy. The Navy will begin using the range at the rate of 4000 sorties a year as soon as the transfer is complete, and later, probably 1960, step up to 24,000 sorties a year, it was disclosed.—

Tonopah Times-Bonanza

• • •

Women Ask Bomb Test Halt . . .

TONOPAH—Citing the possibility that an eight-year-old Nevada boy who died last fall of leukemia may have contracted the disease as a direct result of playing in the area where an immense radioactive cloud hovered for hours, the Tonopah and Goldfield Business and Professional Women's Club issued a vehement plea to halt the current Nevada nuclear tests. The AEC said none of the blasts in the current series will produce as much fallout as did some of the 1955 shots, however an AEC spokesman admitted that Tonopah received a "slightly" heavier dose from the atomic test of May 28 than was at first reported.—*Tonopah Times-Bonanza*

Japanese Quail Released . . .

CARSON CITY — Nevada joined several other states in the simultaneous release of Japanese (Coturnix) quail. A cooperative study is planned after the birds are in the field. Since the Coturnix is a migratory bird, officials believe the cooperative study will greatly facilitate the establishment of a migration pattern for the birds. — *Nevada State Journal*

State Leads in Liquor Use . . .

CARSON CITY—A beverage industry study reveals that Nevada's 1957 first quarter liquor consumption of 1.2 gallons per person was greatest in the nation. California was second with 0.45 gallons consumed per inhabitant. California, however, led the nation in volume of consumption — 5,076,076 gallons in January-February-March, 1957.—*Territorial Enterprise*

Cave Passageways Surveyed . . .

BAKER — National Park Service personnel began a survey to plot the direction and position of the passageways and caverns of Lehman Caves National Monument. Purpose of the project is to determine the possibility of locating a suitable exit from the cave. "Such a secondary outlet will provide for greater convenience to cave visitors and will increase the ease with which the ever increasing numbers of visitors may be guided through the natural cave," the survey chief said.

NEW MEXICO

Ruling Hits State Control . . .

GALLUP — A district judge has ruled that a Navajo Indian can not be prosecuted by the state for a traffic offense which occurred on a federal highway running through the reservation. The Indian, arrested for drunk driving, argued successfully that the state has no jurisdiction over traffic offenses committed by Indians on an Indian reservation. The highway in question was U.S. 666 which bisects the reservation between Gallup and Farmington. The state indicated that it will appeal the ruling.—*New Mexican*

Industry Needs Skilled Indians . . .

LAWRENCE, Kansas—Superintendent Solon G. Ayers of Haskell Institute said that the school no longer has to look for jobs for its Indian gradu-

ates. "Our trouble is in filling the requests. We have to pick and choose," he declared. Last year every one of the 114 vocational students was hired by commencement day for an average \$3100 annual wage. Few of the Haskell graduates return to their reservations to live, Ayers said.—*New Mexican*

To Battle Water Problem . . .

ROSWELL—Terming the nation's water problem as a potential "economic cancer on the future growth and prosperity" of the U.S., the non-profit Southspring Foundation, based on the historic old Chisum Ranch, recently was organized to aid in the relief of the water crisis. The agricultural research organization hopes to focus the nation's attention on the problem. — *New Mexican*

Mexican Trout Imported . . .

TAOS—New Mexico and California fisheries men are experimenting with a batch of Mexican rainbow trout thought to be able to survive in water temperatures up to the middle-80 degrees Fahrenheit. So far the fish have not produced eggs. The regular strain of rainbow trout in most waters today can only stand as much as 53 degrees Fahrenheit and still produce eggs. The fish are at the Red River Hatchery at Taos; the Wildlife Service Hatchery at Truth or Consequences; and the California Fish and Game Department Hatchery at Fillmore.—*New Mexican*

UTAH

Glen Dam Work Unavailable . . .

KANAB — Reclamation Commissioner W. A. Dexheimer warned that employment is not immediately available at the Glen Canyon damsite and furthermore none except a few engineering and heavy construction workers will be hired for many months to come. Dexheimer said both Kanab and Flagstaff now are crowded and their resources are taxed to handle existing needs of workers already in the area. Welfare and law enforcement problems were reportedly increasing in Kanab, due mainly to an influx of transient laborers seeking employment at the damsite. Sharp increases were noted in police arrests.

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Glen Canyon City Planned . . .

KANAB — A Tucson firm announced plans to build a city that could eventually accommodate 10,000 persons on the Utah side of the Glen Canyon damsite, but the U. S. Reclamation Bureau and Glen Canyon Dam's contractors are going ahead with plans to build the town of Page, Arizona. Rincon Builders and Developers, Inc., said its city, to be known as Glen Canyon, will be 13 miles northwest of the damsite on the Utah side of the border. The firm has purchased 120 acres of land here and has drilled four wells. Reclamation Commissioner W. A. Dexheimer termed the Glen Canyon City plan as speculative and noted that it would be 18 months to two years before a good road will be completed from the damsite north to the Utah line.

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Debeque Dam Under Study . . .

GRAND JUNCTION, COLORADO—Studies of a proposed \$204,000,000 dam which would provide irrigation water for 80,000 arid acres of Utah and Colorado was underway. The proposed Debeque Dam would be part of the overall Upper Colorado River Project. Tentative plans call for construction in Debeque Canyon, about 30 miles east of Grand Junction. The dam would be 424-feet high and have a capacity of 6,500,000 acre-feet of water covering 41,000 acres. The dam would back up Colorado River water all the way to Rifle and inundate the communities of Debeque and Grand Valley.—*Vernal Express*

Golden Spike Site Dedicated . . .

PROMONTORY — A seven-acre tract at Promontory containing the site where a golden spike was driven on May 10, 1869, in a colorful ceremony marking the completion of the nation's first transcontinental railway line, was officially designated as the Golden Spike Historic Site on May 10 of this year. The site is north of Great Salt Lake and 31 miles from Brigham City.—*Box Elder Journal*

Life Preservers Required . . .

SALT LAKE CITY—Under a new law recently passed by the Utah legislature, every person in a boat on any state water must be equipped with a life preserver. The law further states that the type of preserver that may legally be used under this act must be prescribed by the state Fish and Game Commission.—*San Juan Record*

Flaming Gorge Estimates Told . . .

VERNAL—The Bureau of Reclamation's most recent estimates show that the Flaming Gorge Dam and Reservoir are scheduled for completion in 1963, with initial operation of the power plant set for January, 1962. Appropriations needed for fiscal years starting in 1959 amount to over \$10,000,000 a year and more until 1963. Total cost of construction was estimated at \$57,184,000. — *Vernal Express*

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MINES and MINING

Four Corners Area . . .

Contracts were awarded for construction of the 485-mile crude oil pipe line from the Four Corners area to Los Angeles. The \$50,000,000 project is an undertaking of leading oil companies which recently formed the Four Corners Pipe Line Company. Construction of some sections started in mid-June. Work on that section of the line between the Colorado River and Olive, California, is scheduled to begin October 15 in order to avoid the extreme summer temperatures. The completed system calls for a pumping station between Joshua Tree and Twentynine Palms, California.—*Desert Journal*

Ely, Nevada . . .

Zirconium has been discovered in what appears to be substantial and valuable quantities close to Highway 6 about 12 miles southwest of Ely. Between 40 and 50 claims were staked on the ground.—*Inland Empire Miner*

Lucerne Valley, California . . .

Permanente Cement Company officially opened its new \$13,000,000 plant in Cushenbury Canyon. The operation, with a capacity of 2,500,000 barrels of cement annually, is the largest cement producer in the seven western states. Initial permanent work force will total approximately 180 men and the annual payroll will exceed \$1,000,000, company officials said.—*Victor Press*

Washington, D. C. . . .

Private industry now does most of the exploration drilling for deep-seated uranium occurrences in the United States. Several million feet of private drilling was done in 1956, whereas the Federal Government's drilling was measured in thousands of feet. — *Georgia Mineral Newsletter*

Grand Junction, Colorado . . .

Initial operation of the Atomic Energy Commission's Grand Junction pilot plant indicates removal of uranium from lignite is technically possible. The AEC said a commercial plant capable of fairly good recovery can be built, but the question is primarily one of cost. Removing uranium from lignite would be more expensive than the cost of a conventional type process from carnotite and other materials.—*Pioche Record*

New York City . . .

Floyd B. Odum's Atlas Corporation expects to recover the costs incurred in its uranium holdings by 1960, "with substantial amounts of ore still remaining to be mined." Odum predicted that Atlas' uranium mining holdings will produce a net cash flow after taxes of about \$8,000,000 in 1957; \$11,000,000 in 1958; and \$13,000,000 in 1959. But the Delta Mine, Atlas' first venture in uranium, purchased in 1954 for \$9,000,000, "is virtually mined out," Odum said. — *Salt Lake Tribune*

Manhattan, Nevada . . .

White Caps Gold Mining Co. is preparing the old White Caps mine at Manhattan for active operation. The mine has been under water since 1935 and the shaft is being pumped out. In its productive years, the mine yielded \$5,000,000 in gold.—*Pioche Record*

Grand Junction, Colorado . . .

Union Oil Company's experimental oil shale plant on Parachute Creek in northwest Colorado was dedicated recently in what some industry leaders feel is a pioneering step that may eventually lead to establishment of a new oil industry in this part of the nation. The quantity of oil recoverable from the dry, light brown and black sedimentary rock, varies from one or two gallons per ton of shale to as much as 100 gallons. Recovery from the Union Oil Company's operation is about 30 gallons per ton. U. S. Bureau of Mines estimates place the total U. S. oil shale reserve at 1,260,000,000,000 barrels.—*Phoenix Gazette*

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Big Indian District, Utah . . .

Discovery of a new high grade uranium ore body in the Big Indian Mining District of Utah was announced by Standard and Col-U-Mex Uranium corporations. The new mine is a mile southeast of Charles Steen's Mi Vida mine in San Juan County, and 1600 feet south of Standard's Big Buck mine.—*Pioche Record*

Pioche, Nevada . . .

Boron, first discovered in Nevada in 1872 by F. M. "Borax" Smith, has made the full circle of popularity and is again one of the most sought after minerals in the state. Research has revealed that boron has special properties which increase the efficiency of high energy fuels, help plastics retain their flexibility through extremes of temperature, and produce new refractory hard metals called borides. Search for boron is concentrated on dry lakes.—*Pioche Record*

Austin, Nevada . . .

Coffenite ore averaging 1.33 percent uranium oxide for a width of 10 feet has been hit in a diamond drill hole by Apex Minerals Corporation in its Austin operation. Easterly another 50 feet, at a depth of 132 feet, the drill has cut six feet of coffenite ore averaging in excess of one percent.—*Nevada State Journal*

Washington, D. C. . . .

The Interior Department announced two changes in the regulations governing mineral leasing of land owned by Indian tribes and individuals. Annual rental under leases for minerals other than oil and gas have been fixed at not less than \$1 an acre. Annual development expenses will be not less than \$10 an acre unless otherwise authorized by the Indian Commissioner. The other change provides that the term of mining leases on individually owned Indian lands may extend for 10 years and as long thereafter as minerals are produced in paying quantities. The old regulations provided for annual rental rates on a graduated scale of 25 cents per acre up to one dollar. Development expense requirements varied by minerals, but were less than \$10 an acre for all except coal, and leases for minerals other than oil and gas on individual lands were limited to 15 years without regard to production.—*Mining Record*



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Boron, California . . .

James M. Gerstley, president of United States Borax and Chemical Corporation, said his firm controls 70 percent of the known U. S. high-grade reserves of boron, a metal of increasing importance in atomic energy work. The U. S. accounts for 90 percent of the world's output of this material at present, he added. The company's reserves were estimated at 80,000,000 tons or enough to last 100 years at the current rate of consumption. — *Salt Lake Tribune*

Salt Lake City . . .

All uranium miners in the Colorado Plateau will be eligible for free medical examination during this summer. Two United States Public Health Service medical teams, operating in trailers, will move from one mining district to another to examine the U-workers. Dr. Harriet L. Hardy of Boston, a leader in the field of occupational disease, believes development of occupation-caused malignant disease among uranium miners seems unlikely for two reasons: most of the mines are small and the larger ones are well ventilated; the miners don't seem to stay long enough in one place to get a dangerous exposure to radioactive material.

Washington, D. C. . . .

Senator Alan Bible of Nevada has introduced a bill which would allow recognition of geophysical or geochemical surveys; exploratory drilling or accessibility of minerals on the claim—and making these forms of exploration and development applicable to the \$100 yearly labor requirement of the mining laws. Bible explained that while his amendment does not exclude the older types of exploratory work as assessment work, it does include the use of more modern methods if the claim holder wishes to use them. — *Pioche Record*

Blanding, Utah . . .

An important oil and natural gas show has turned up at the Butler Wash area, 11 miles southwest of Blanding. Wildcat driller Ralph Fair reported recovering between 2140 feet and 4700 feet of heavily gas cut drilling mud. This is the first time gas has been found below the salt section in the Paradox Basin.—*Salt Lake Tribune*

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Navajo Reservation, Arizona . . .

Sixteen oil companies are engaged in oil exploration work in northeastern Arizona and southern Utah in preparation for the fall opening of 250,000 acres in Arizona and 125,000 acres in Utah to competitive oil and gas lease bidding by the Navajo Tribal Council. In most cases the preliminary work consists of seismographic explorations. Oil men report that the Black Mesa Basin, larger than either the producing Paradox and San Juan basins, is potentially a great oil area. However, the southern part of the mesa is within the Hopi Reservation where exploratory work is not being allowed at present.—*Phoenix Gazette*



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Papago Reservation, Arizona . . .

American Smelting and Refining Company apparently submitted a high bid of \$1,066,000 for exclusive exploration rights on three tracts covering a total of 15,000 acres of Papago Indian Reservation land. Three other firms also figured in the bidding. The bid must be approved by the tribal council as well as individual Indians to whom all but 160 of the acres have been allotted.—*Mining Record*

• • •

Denver, Colorado . . .

A wide-open competitive market for uranium once the atoms for peace program gets underway was predicted by David F. Shaw, assistant general manager for manufacturing of the Atomic Energy Commission. He assured miners that the government would not use its supplies to take away their sales. Shaw said the government's interest in all forms of fissionable materials is for

two purposes: military and research. If any new uses require any great amount of these materials, an open market will be created, he said.—*Mining Record*

TRUE OR FALSE ANSWERS

Questions are on page 14

- 1—False. The chuckawalla is harmless.
- 2—False. Beaver are protected along most of the Colorado.
- 3—False. Rainbow Bridge national monument is in Utah.
- 4—True. 5—True.
- 6—False. Desert mirages may be seen during any month of the year.
- 7—True.
- 8—False. Creosote grows below sea level in Imperial and Coachella basins.
- 9—True. 10—True. 11—True.
- 12—True. 13—True.
- 14—False. Capitol of New Mexico is in Santa Fe.
- 15—True. 16—True.
- 17—False. Havasupai Canyon is a tributary of Grand Canyon.
- 18—True.
- 19—False. The reservoir behind Davis Dam is Lake Mohave.
- 20—False. Imperial Valley is irrigated from the Colorado River.

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AMATEUR GEM CUTTER

By DR. H. C. DAKE, Editor of The Mineralogist

When synthetic rutile (Titania) first appeared on the market, most gem cutters found it a difficult stone to polish in the usual manner in which the softer facet-cut gems are handled. Rutile is comparatively soft, having a hardness of from 6 to 6½, less than that of agate. After a good deal of experimenting by many gem cutters, both commercial and amateur, it was found that diamond dust was ideal. In fact some cutters state that diamond is the only substance suitable for polishing this soft and brittle material.

Fenton Combs, pioneer amateur gem cutter, uses the following technique:

"I have cut over 500 carats of synthetic rutile. The material is rather brittle, so I have been cutting an extra row of facets around the girdle, top and bottom, at an angle of 70 degrees. The main facets on the base are cut at 37 degrees, on the crown at 27 degrees. This gives a thin stone so the extra facets around the girdle are a help in preventing chipping in mounting. I am cutting the star facets next the table at 20 degrees, the skew facets at 31 degrees which gives well proportioned facets with not too big a table. All cutting and polishing is done with diamond, roughing out with 250 on copper, grinding with 1200 on copper, polishing with 4 micron on copper.

"For the polishing lap the diamond is mixed with olive oil and merely rubbed into the lap with the end of a quartz crystal. A minute quantity will polish a stone. Being soft, I first tried cerium oxide on lucite but this did not work. Then tin oxide, then aluminum oxide, then the same things on lead and tin laps, with the same lack of results.

"The last thing I thought of was diamond lap and that did it, just five to 10 seconds on each facet. I previously had not been able to polish anything softer than an eight on the diamond lap, but with rutile it gives a perfect job, with no sign of scratches."

* * *

The beginner in cabochon cutting often is at a loss to know what angles should be made on the edge or girdle of a cabochon cut stone. This depends on the stone's purpose. If it is merely a gem that is for display only and not to be mounted, it matters little what angle is left at the "bezel" portion.

If the stone is to be mounted, consideration must be given to the type of mounting to be used; otherwise the manufacturing jeweler may have difficulty in properly mounting the gem. If the stone is to be mounted in a heavy cast sterling silver

mounting, then only a slight angle need be given the bezel portion. Measuring the slope from the flat base, the angle should be approximately 10 degrees. The reason only a slight angle is given for this type of mounting is the difficulty of pressing or bending a heavy mass of silver. On the other hand, if the gem is to be mounted in a gold mounting where thin strips of gold are bent by hand to form the bezel, then 20 to 30 degrees slope should be given to the side of the stone. Similar silver mounts can be given a slightly lesser angle.

A cabochon cut stone lacking the proper angle for the given type of mounting will tend to loosen in the setting. Generally a cabochon gem that becomes loose in the mounting can be charged to incorrect cutting or careless work in mounting, or, of course, rough use of the ring may loosen any stone in its mounting.

* * *

The hard felt buffs used in the lapidary industry require very little care. Long continued polishing of small stones may wear grooves on the periphery or the buff may become contaminated with silicon carbide or other grits which may cause scratches to appear on the work. It is possible to easily and quickly renew or "dress" the surface of the felt buff by the method given below.

A one-inch wide steel file (long handle) is cut down on the grinding wheels to a blunt chisel edge. The file edge is then held against the felt buff and small amounts of the buff surface are cut away. By moving the tool back and forth across the face of the buff, any amount can be trimmed away. Both felt and the polishing powder embedded in the felt can be easily cut away. If the polishing powder is suspected of being contaminated it is advisable to clean same from pan and start with a new charge.

In changing from one polishing agent to another, separate felt buffs are advised. However, the buff can be cleaned in the manner referred to above, and a new polishing agent brought into use. This is important, especially in changing polishing agents where one may be finer than the powder previously used.

* * *

Attention has been called to the operation of various lapidary tools at standard speeds for best performance. Grinding wheels, for example, give best efficiency when operated at a surface speed of approximately 6000 feet per minute, or about 1910 revolutions per minute in the case of a 12-inch wheel, it will be seen that in order to get the same

efficiency, a 6-inch wheel would have to be operated at a high r.p.m. speed.

The following formula will give surface feet per minute: R.P.M. X diameter X 3.1416 divided by 12, equals surface feet per minute.

To find the number of revolutions of wheel spindle, surface speed and diameter of wheel being known, multiply surface speed in feet per minute by 12, divide the product by 3.14, and divide again by the wheel diameter to obtain r.p.m. of wheel.

To find proper speed of countershaft (line shaft), proposed speed of grinding arbor being given: Rule—Multiply the number of revolutions per minute of the arbor by the diameter of its pulley, and divide the product by the diameter of the driving pulley on the line shaft.

To find the diameter of pulley to drive arbor, speed of line shaft being given: Rule—Multiply the number of r.p.m. of the arbor by the diameter of its pulley, and divide the product by the number of r.p.m. of line shaft.

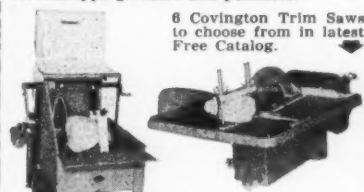
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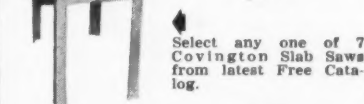
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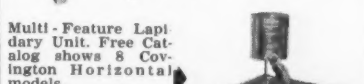
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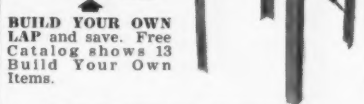
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moved, wash away the grit and then go to 400 grit. Next step is 600 grit.

For buffing remove the grit paper, clean the slab and sander, put three layers of cotton canvas on the sander and place wet tin oxide on the slab. Move the sander back and forth until the stone's surface is nearly dry but not hot. Apply the tin oxide two or three times.—*Pseudomorph*

AUGUST SHOW CALENDAR

- July 27-August 11—San Diego, California. Mineral and Gem Society's show in conjunction with the city's Fiesta del Pacifico.
- August 4—Hollister, California. Tri-Club Rock Swap at Bolado Park.
- August 4-10—Portland, Oregon. Oregon Agate and Mineral Society's show at Oregonian Hostess House, 1320 S.W. Broadway.
- August 10-11—Bayfield, Colorado. Navajo Trails Gem and Mineral Club's show at Gem Village.
- August 17-18—Santa Cruz, California. Mineral and Gem Society's show at Riverside Hotel.
- August 17-18—Hermosa Beach, California. South Bay Lapidary and Mineral Society's show.
- August 17-18—Morton, Washington. Four Club Rock Show.
- August 22-25—Bremerton, Washington. Kitsap Gem and Mineral Society's show in conjunction with county fair.
- August 29-31—Old Point Comfort, Virginia. Eastern Federation of Mineralogical and Lapidary Societies' convention and show.
- August 29-September 2—San Fernando Valley Fairgrounds, Devonshire Downs, California. Mineral Dealers Show.
- August 31-September 2—Tacoma, Washington. Northwest Federation of Mineralogical Societies convention and show.



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Gem Societies Name Officers

The following new officers were elected to head the East Bay Mineral Society of Oakland, California: Harold Mahoney, president; Emmett Murray, vice president; Mr. and Mrs. Francis Rhodes, treasurers; Dorothy Miller, secretary; and Fred Cochran, director.

New officers of the Chicago Rocks and Minerals Society are Louis Holtz, president; Edward Rushton, vice president; Margaret Laehr, recording secretary; Dorothy Smith, corresponding secretary; Lorenz Gleiser, treasurer; Gerald Ostrum, editor; and Selma Jenner, curator-historian. — *Pick and Dop Stick*

Glen Gipson was elected president of the Arrowhead Mineralogical Society of Fontana, California. Serving with him will be Jerry Almind, vice president; Loren McCroskey, secretary; Lucia Mehning, treasurer; John Kelly, trustee; Vivienne Dosse, federation director; and Eula and Johnnie Short, co-editors.—*Arrow Points*

The following officers were elected by the Colorado Mineral Society of Denver: Ralph C. Ellis, president; Arthur J. Ermish, first vice president; Bernard Bench, second vice president; Jean Walker, secretary-treasurer; and Grace Neill, corresponding secretary.—*Mineral Minutes*

Election of the organization's first woman president, Dorothy Harrington, was announced by the San Jose, California, Lapidary Society. Other officers are Bill Fuller, vice president; George Gillespie, secretary; and Lucille Scott, treasurer.—*Lap Bulletin*

New officers elected for the 1957-58 club year by the Montebello, California, Mineral and Lapidary Society were Albert D. Carter, president; Gertrude F. Nagele, vice president; June Ross, secretary; Robert A. Carter, financial secretary; W. N. Ewing, treasurer; John Morrell and Miriam Taylor, directors; Walter K. Nagele, federation director; and Clarence Jenni, editor.—*The Braggin' Rock*

CHINESE NAMED THOUSANDS OF DIFFERENT JADE COLORS

The classic nine colors of nephrite jade during the great ages of its carving in China were: translucent white, indigo blue, moss green, plume-of-the-kingfisher, yellow, cinnamon red, blood red, lacquer black and opaque white. The last mentioned color was and still is the most highly prized of all jade hues.

These are by no means all the names given to the colors of jade—sunflower, cassia, melon peel, date skin, moss, fruit flesh, spinach, cow hair, water, candle red, red-of-a-child's-face, purple-of-the-veins, silk, porcelain and duck bone are just a few of the thousands of names used in the jade trade.

In addition to the color of jades, the Chinese also speak of the fragrance of jade, but this probably alludes to those jade pieces buried so long with the spices and perfumes of the grave that they took on distinctive fragrances.—San Gabriel Valley, California, Lapidary Society's *Stone Tablet*

H-BOMB BLAST PRODUCES TWO NEW ELEMENTS

The first full-scale hydrogen bomb explosion in the Pacific in late 1952 produced two new elements which have been added to the conventional list of basic substances.

Three groups of researchers recommended that the new elements be named after the late Dr. Albert Einstein and the late Dr. Enrico Fermi, scientists who played important roles in the development of atomic energy. Such recommendations usually are accepted in the scientific world.

The new elements were numbered 99 (einsteinium) and 100 (fermium) in the

roster of chemical substances. Some of the details concerning these elements are classified.—Sacramento, California, Mineral Society's *Matrix*

Wyoming Jade, varying in color from a light pea green to a very dark green that is almost black, is in demand by rockhounds, collectors and jewelers. Specimens also have been found in white, yellow and mottled jade colors. There are two kinds of Wyoming Jade, jadeite, silicate of aluminum and sodium; and nephrite, calcium and magnesium silicate.—Fresno, California, Gem and Mineral Society's *Chips*

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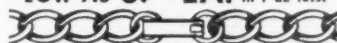
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No. 26C-16 GF
1 for \$1.50 3 for \$3.40 1 dz \$12.00



HEAVY ROPE NECK CHAIN 18"
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PLASTIC BOXES for collectors. Over 60 sizes, free leaflet. Schrader Instrument Company, Independence, Iowa.

BARGAIN SPECIALS: send dollar bill for 1 rare Brazilian Phenacite clear crystal—or 3 howlite nodules—or 2 beautiful pink-white chalcedony roses—or 5-square-inch slab Utah dinosaur bone—or 9 tumbled gems from South Australia. State preference. Lapidary, 13814 Ventura Blvd., Sherman Oaks, California.

FAMED FLUORESCENT collection of late George Williams for sale. Over 100 large pieces plus two large lamps. See and make offer. 7417 Denny Ave., Sun Valley, California.

AGATIZED WOOD. Beautiful colors, patterns. Fine for cabs, slabs, tumbling. Large chunks for book ends, spheres included in 100 lb. bag sizes to ton available. 5 lbs. \$2.50; 25 lbs. \$10 plus postage; 100 lbs. \$35 FOB Barstow. Federal tax included. California residents add 4%. Bill Depul, Box 593, Barstow, Calif.

COLLECTORS ATTENTION! Rough and Cut Stones at lowest prices. Large assortment. Ask for price list. Will send on approval to responsible party. L. de Crissey, P. O. Box 93, Times Square Station, New York 36, N.Y.

HAVE REAL FUN with desert gems, minerals and rocks. The rockhound's how-to-do-it magazine tells how. One year (12 issues) only \$3.00. Sample 25c. Gems and Minerals, Box 687-D, Mentone, California.

LARGE VARIETY mixed tumbled stones—tigereye, agates, obsidian, palm root, quartz. 40-60 stones in pound—only \$4. Free: matched preforms with every pound purchased. Cash or money orders, tax paid. Sid's Originals, Route 1, Box 369, Beaumont, California.

GEMS A-PLenty: Beautiful baroque gems, large variety, tumbled polished all over, \$10.00 for one pound (about 100 stones). 10 lbs. of top grade gemstone prepaid for \$7.00. Wholesale price to dealers on baroque gems and gemstone in the rough. Satisfaction guaranteed on every sale. San Fernando Valley Gem Co., 5905 Kester Ave., Van Nuys, California.

VISIT GOLD Pan Rock Shop. Beautiful sphere material, gems, mineral specimens, choice crystals, gem materials, jewelry, baroques, etc. Over 100 tons of material to select from. John and Etta James, proprietors, 2020 N. Carson Street, Carson City, Nevada.

MEXICAN AGATE Nodules: a beautiful polished specimen postpaid \$1.00 or 10 for \$5.00. B.H. Rock Shop, 29 Cherry Lane, Granbury, Texas.

TURQUOISE FOR Sale. Turquoise in the rough priced at from \$5 to \$50 a pound. Royal Blue Mines Co., Tonopah, Nevada.

PETOSKEY AGATE Shop, Gould City, Michigan. Petoskey stones, rough or polished. Petoskey stone jewelry. Floyd Irwin, Manager.

ROUGH INDIA star ruby, dopped, oriented. Ready to cut and polish. With instructions \$3.00. Price list free. Jack Schuller, 616-D Overhill, Park Ridge, Illinois.

VISIT ROY'S Rock Shop 101 Highway, Trinidad, California. Agates, thunder-eggs, minerals, rough materials, baroques, findings, preforms, polish specimens, wholesale retail dealers send one dollar for samples and price list. Box 133.

DINOSAUR BONE. Gem quality colorful agatized, jasperized, opalized bone 50c pound. Also beautiful red lace agate \$1 pound. Postage extra. Gene Stephen, Route 2, Grand Junction, Colorado.

35 YEAR collection, specimens, slabbing rough and finished, tumbling, all kinds of agates and fire, jasper, palm wood, arrowheads, hammers, fossils, geodes, minerals, purple glass—any amount. D. W. Rogers, 3 blocks north Midland elevator, Ashton, Idaho.

HUNT IN our rock yard. Agate, jasper and wood. Rocks for jewelry and decorations. Pollard at Green's Little Acre Trailer Park. Route 80, 6 miles east El Cajon, California.

MICROMOUNTS. Colorado mineral specimen. State power of microscope. Preforms in opalized wood and fossils. A few select preforms in red sillimanite and blue sillimanite. Jarco, Littleton, Colo.

AGATE, JASPER, wood, gem grade, very colorful. Two pounds \$1.00. Ten pounds \$4.50 pp. Preston, Star Route, Box A-23, Grants, New Mexico.

OPALS AND Sapphires direct from Australia. Special—this month's best buy: Cut and polished black opal doublets; 12 beautiful stones including earring pairs up to 15 mm. All for \$18. Free airmailed. Send personal check, international money order, bank draft. Free 16 page list of all Australian Gemstones. Australian Gem Trading Co., 49 Elizabeth Street, Melbourne, Australia.

SUMMER SPECIAL — Overstocked on slabbed agate, wood and jasper — 30-square inches \$5.00 postpaid until September 30. Carpenter's Trading Post, P.O. Box 97, Cavecreek, Arizona.

OPEN 8 A.M. to 5 P.M. Monday through Friday. Other hours by appointment or when home. Residence back of shop. Mile west on U.S. 66. McShan's Gem Shop, Box 22, Needles, California.

GENUINE TURQUOISE: Natural color, blue and bluish green, cut and polished Cabochons—25 carats (5 to 10 stones according to size) \$3.50 including tax, postpaid in U.S.A. Package 50 carats (10 to 20 cabochons) \$6.15 including tax, postpaid in U.S.A. Elliott Gem & Mineral Shop, 235 E. Seaside Blvd., Long Beach 2, California.

POLISHED PREFORM slices of all kinds. Beautiful for Bolos. Sample Order 3 for \$1.00 prepaid. Approximately 85 to the pound \$15.00 per pound. Parts for Bolos and all jewelry findings. Lowest prices. Wholesale to dealers. Jewelmags by Jay O'Day. P.O. Box 6, Rancho Mirage, Cal.

JUREANO WOOD, gem quality, 65 cents plus postage. A. B. Cutler, Box 32, Salmon, Idaho. Slabs, tumbled, J. E. Cutler, Gearhart, Oregon.

FLUORITE OCTAHEDRONS, 10 small gemmy cleavage crystals \$1 postpaid. Gene Curtiss, 911 Pine Street, Benton, Kentucky.

C. EARL NAPIER "for rocks." 19 Lake View, Boulder City, Nevada. Free guide service to collecting areas.

FOR SALE: Beautiful purple petrified wood with uranium, pyrolusite, manganite. Nice sample \$1.00 Postage. Maggie Baker, Box 7, Hackberry, Arizona.

COLORADO MINERAL specimens, cutting and tumbling materials. Send 2 cent stamp for list and terms. Dealers please write for wholesale list. John Patrick, Idaho Springs, Colorado.

12 POUNDS OF beautiful Colorado mineral specimens, \$8.00 prepaid. Ask for list of others. Jack the Rockhound, P. O. Box 245, Carbondale, Colorado.

WE ARE MINING every day. Mojave Desert agate, jasper and palm wood, shipped mixed 100 pounds \$10.50 F.O.B. Barstow. Morton Minerals & Mining, 21423 Highway 66, R.F.D. 1, Barstow, California.

OPALS, DEEP red, blue, green, golden, flashing in all colors of the rainbow, direct from the mine, 15 for \$5.00. 10 ringsize stones, (opal, amethyst, etc.) ground and polished, ready to set \$5.00. Kendall, Sanmiguel d'Allende, Guajuato, Mexico.

IN RUIDOSO, New Mexico, visit the Gem Shop. Gemstones, mineral specimens, gemstone jewelry, cutting materials, slabs, crystals, decorative items, sea shells, Indian points. James and Woodie Gayden. One mile west of Post Office on Main Road, Upper Ruidoso.

NEW FEDERATION FORMED IN CENTRAL PLAINS

Representatives of several Kansas and Missouri gem and mineral clubs met in Wichita recently to form a new organization, Central Plains Mineral Clubs. A. C. Carpenter of Ottawa was elected president; Leo Dierksen of Hutchinson, vice president; Mrs. C. C. Williams, Lawrence, secretary; and Stephen B. Lee, Wichita, treasurer.

Discussed at the organizational meeting was the possibility of having an annual show, the locale of which would rotate among the member cities.—*Quarry Quips*

Odontolite often is mistaken for true turquoise. However, this material comes from animal bones and teeth that have been dyed blue by phosphate of iron while in the process of fossilizing. It sometimes is known as bone or fossil turquoise.—Evansville, Indiana, Lapidary Society's News Letter

Quartz with spangled inclusions is known as aventurine. The included minerals are scales of shiny mica or hematite. The most familiar aventurine is of a reddish-yellow color and has a coppery sheen. Only small quantities of aventurine have been found in this country.—*Rockhound's Bark*

COLORFUL JASPER IS IDEAL FOR NEW LAPIDARIES

Jasper is one of the more familiar stones. It usually is found among the gravel of stream beds in regions of comparatively recent lava flow, and along beaches. Jasper consists of a compact aggregate of finely granular quartz mixed with impurities in large amounts that give it its coloring.

Most common colors are reds, browns and greens and mineralogists have identified about 70 different varieties of jasper.

This stone takes a splendid glossy polish, wears well and is very attractive. Because it is abundant and polishes so readily, it is considered an excellent material for beginners of the rock cutting hobby.

Jasper occurs in many areas. The Morgan Hill, California, region produces one of the most striking jasper types—orbicular jasper—bright red matrix with circular areas of white, gray, yellow and orange.

From the lavic fields of the Mojave Desert come good jasper specimens. A red and white banded jasper is found in Shasta and San Bernardino counties of California, two widely separated localities.

Exceptionally attractive yellow and red jasper was brought up during the sinking of the foundation for the Golden Gate Bridge in San Francisco Bay and it is believed the bridge rests on jasper foundations.

A few years ago a very large mass of gem quality jasper was found by an Antelope, Oregon, farmer while plowing his field. Pebbles of variegated jasper occur on the beaches of Santa Catalina Island where it is known as Catalinate.—Hogan Hollingsworth in the Sequoia, California, Mineral Society's Bulletin

Service station owner "Hap" McLaughlin, a member of the San Geronio Mineral and Gem Society of Banning, California, is building a large four-foot long tumbler. Polished rocks produced in this tumbler will be given free to children of his customers.

Chalcocite is common in small amounts in many of the copper mines of California. These specimens usually are coated with malachite, but chalcocite itself is dark gray to black and has a metallic luster. The most important copper ores are the sulphides and these contain not more than 12 percent and sometimes as little as one percent copper.—Arrow Points

MANY KINDS OF INORGANIC PEARLS FOUND IN WORLD

California abalones occasionally develop blister pearls which are of no value as far as pearls go, but can be cut into attractive cabochons. Seed pearls sometimes have been found in Puget Sound oysters. Fresh water mussels which produce pearls of high luster are found in the Mississippi Valley streams as well as in various streams of Europe, Japan and China. Conch pearls, produced by Florida mollusks, usually are pink or yellow and are more of a curiosity than a gem stone.

The pearl is the only organic material to be accepted as a birthstone and gem pearls are produced mainly by the pearl oyster of the warm tropical seas. They usually are called "Oriental pearls." Baja California waters produce fine black pearls.—Contra Costa, California, Mineral and Gem Society's Bulletin

CRUMPLED FOIL ABSORBS FALL OF PRECIOUS GEMS

If you are working on a precious stone for the first time, and are afraid of dropping and ruining it, try this:

Fern Dunlap of the Southern Siskiyou Gem and Mineral Society made a tray under her grinding wheel and sander out of used aluminum foil. To this she fashioned a connecting deflector at the buff. Now, when a stone breaks loose, it hits the deflector and drops back into the tray, unharmed. The slightly crumpled foil is an excellent fall absorber.

LOOK...

...have you wanted to experiment with different polishing agents, but have been stopped cold by the high cost of pound lots?

We are making an offer of SEVEN DIFFERENT AGENTS of one ounce each (except Linde A, which is 8 grams) in plastic containers at the small cost of only \$2.10 post-paid in the U.S.A.

They are Tin Oxide, Chrome Oxide, Cerium Oxide, Zirconium Oxide, Levigated Alumina, Tripoli and Linde A.

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3622 Tweedy Blvd. South Gate, Calif.

Announcement was made by the Benicia, California, Rock and Gem Club that it will hold its annual show on September 21-22. The event is scheduled for the Memorial Building in Benicia and show hours are 10 a.m. to 10 p.m. on the 21st and 10 a.m. to 8 p.m. on the 22nd.

"Gem Stones of the United States" is the title of a 253-page book by Dorothy M. Schlegel that the Geological Survey recently published. Those wishing a copy of this publication should send 25 cents to the Superintendent of Documents, Washington, D.C. Request: Geological Survey Bulletin 1042-G.—Ghost Sheet

HIGHLAND PARK

THE LAPIDARY'S STANDARD OF VALUE

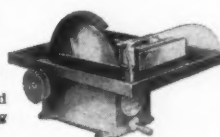


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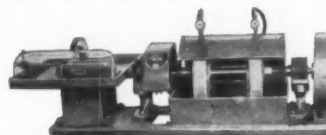
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Highland Park Power-feed Slab Saws. Sizes range from 12" to 24". Metal or Lucite hood.

J-2 & J-3
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Available in all sizes. Perfect Combination Unit for Lapidary work. Handles sawing, grinding, sanding and polishing. Exceptionally quiet operation.



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Arbors of all sizes—Tumblers, two models. Wet and dry belt sanders—Lapidary units in two different sizes.

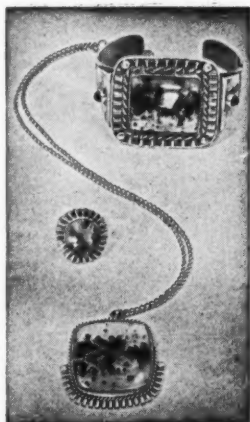
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By RANDALL HENDERSON

MANY OF US who have had the privilege of boating on the Colorado River and its tributaries, hoped that some day the scenic Glen Canyon sector of the Colorado would become a national park. At one time, when Harold Ickes was Secretary of the Interior, there seemed to be a good prospect that this dream would come true.

But the opposition of private power companies was too strong, and the last vestige of hope for such a project faded away recently when the Reclamation Bureau accepted a bid for the construction of Glen Canyon dam—and the impounding of a 200-mile reservoir behind it.

If the program is carried out according to schedule the lovely coves and grottos and estuaries of Glen Canyon which in years past have been a delight to explorer and photographer, will be submerged beneath the water of a new man-made lake.

But there are other gorgeous canyons along the Colorado and its tributaries. Recently I had the opportunity to become acquainted with other gorges which in some respects are even more impressive than Glen Canyon.

I am referring to Labyrinth and Stillwater canyons of the Green River in Utah—just upstream from its confluence with the Colorado. With Georgie White as skipper, 24 of us spent a leisurely week floating through Labyrinth and Stillwater and thence through the tumultuous waters of Cataract Canyon to the old ferry crossing at Hite. The story will be written in more detail for a later issue of *Desert Magazine*.

The Labyrinth Canyon trip has not been a popular river excursion in the past because it was not practicable—due to lack of exit roads—to navigate this sector of the Green without continuing downstream through the hazardous waters of Cataract Canyon to Hite. But the new lake behind Glen Canyon dam eventually will back far up into Cataract Canyon and submerge most of its rapids in silt. My guess is that in future years the boat trip from the town of Green River, Utah, through Labyrinth and Stillwater Canyons and thence across the surface of the new lake, will become one of the most popular outboard motor excursions in the Southwest. The beautiful coloring and fantastic formations of Labyrinth Canyon walls will make this a trip never to be forgotten.

* * *

In a world in which the biggest item in most of the national budgets is the cost of weapons and the training of men to kill, and in which the chief goal of individual effort appears to be higher wages or more income, it is refreshing to spend an hour reading Joseph Wood Krutch's *Voice of the Desert*.

Krutch is a naturalist—an interpretative naturalist—who studies the plant and animal life of the desert world to determine what lessons may be learned for the guidance of human beings. From the standpoint of those who appraise everything that lives on this earth, and the earth itself, only in terms of immediate personal gain for themselves, some of Krutch's conclusions are pure heresy. For instance, his suggestion that "there are places where the creosote bush is a more useful plant than cotton" will bring an immediate protest from a majority of my friends in the real estate business, providing they have become interested enough in the land they are selling to learn what a creosote bush looks like.

Nevertheless, it is obvious to all who can read and learn, that in a large measure Arizona's critical shortage of water is due to the folly of plowing up too many acres of creosote and planting too many acres of cotton.

There is a word in the English language, the significance of which should be taught to every youngster in school. The word is "ecology" and it is defined in the dictionary as "the branch of biology which teaches the mutual relations among organisms and between them and their environment." It is good for one's humility to become familiar with the ecology of this earth on which we live—the fine balance which Nature preserves when left to her resources—and the penalty we humans pay when we discard as useless every plant and animal which does not appear to contribute to our own immediate gain.

As Dr. Krutch concludes: "We must live for something besides making a living. If we do not permit the earth to produce beauty and joy, it will in the end not produce food either."

* * *

This is written in mid-July. Most of the desert shrubs have completed their flowering cycle, and their seeds have been broadcast by one of the many methods Nature uses to perpetuate the species.

For humans who spend July and August in this land of high temperatures, summer is a discomfort to be endured, or an adventure in the fine art of adaptability, according to the attitude of the individual.

It is good for folks to keep their adaptive functions active. To a person in normal health, extremes of heat and cold, within limits, are beneficial, just as are wind, and sunny and cloudy days. Dr. Alexis Carrel's chapter on adaptation in *Man the Unknown*, is one of the finest essays I have ever read on this subject. It has helped make year-around living on the desert a stimulating challenge during my 46 years of desert experience. And I will repeat again my old formula for summer comfort—keep busy, breath deeply, and drink plenty of water.

BOOKS of the SOUTHWEST

PHYSICAL WELL-BEING IS ESSENTIAL TO PROGRESS

While biological sciences generally accept the Darwinian theory of evolution through the process of competitive natural selection, the research of more recent students of natural science has led to the conclusion that other factors than competition have a modifying influence on survival.

One of those who has sought by field study to throw further light on the subject of evolution is Dr. Angus M. Woodbury of the University of Utah. His recent book *Comfort for Survival* suggests that the constant quest of animal life for physical comfort has an important bearing on survival.

Dr. Woodbury has carried on his studies for many years, especially with reptiles and birds, and much of the book is devoted to his findings in the field, largely in Utah.

He has established ample proof that under conditions of minimum comfort, animal life may forget hunger, mating and other fundamental drives until that first of all requirements, physical well-being, has been, at least in part, satisfied.

Without for a moment suggesting that he has said the last word on the subject, the author presents a challenging, provocative document — particularly significant when we realize its human and evolutionary implications.

Published by Vantage Press, New York. 104 pp. Half-tone illustrations. Bibliography. \$3.00.

BONANZA SEEKER SPINS 50 LOST TREASURE TALES

A despondent man, wracked by money problems, decided to end it all. He climbed a tree and tied his rope to a limb. Just as he was about to jump, he saw an old man below burying a heavy sack. After he left, our hero climbed down and dug up the sack. It contained a fortune in gold! He was deliriously happy and lived that way ever after. But, the old man, returning to the scene and finding his treasure gone, climbed the tree and used the rope.

This is how Robert G. Ferguson explains the way the finding—and losing—of gold affects men in his new book,

Books reviewed on this page are available at Desert Crafts Shop Palm Desert, California
Add four percent sales tax on orders to be sent to California
Write for complete catalog of Southwestern books

Lost Treasure, The Search for Hidden Gold.

Ferguson is not a professional writer. He is a miner and lost treasure hunter who has spent a lifetime tracking down these bonanzas and swapping tales about them with other old timers. The notes he made on these lost mines, never meant for publication, make up the book.

Some of the 50 stories we have heard before, a few of these contain interesting variations. Some of the stories are fresh. Some of them sound amazingly authentic. And some hang by a very thin thread—but if all the facts are known, then there would be no lost mines. The important thing is that the teller be entertaining as well as informative, and this Mr. Ferguson is.

Published by Vantage Press, New York. 135 pages; \$2.75.

TWO URANIUM PROSPECTORS WRITE COMPLETE MANUAL

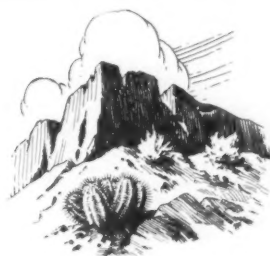
Uranium Prospecting, A Complete Manual is a new book on the practical aspects of uranium prospecting in particular and all mining in general.

The authors, Donald W. Swanson and William Van der Ley, answer every conceivable question that the weekend as well as veteran prospector might ask—where to look for uranium, the merits and demerits of prospecting equipment, how uranium got into the ground, how to stake and file claims in each of the 48 states, sampling ore for assay, addresses of AEC offices and uranium producers, developing the claim, handling explosives and, finally, what the government will pay for the ore. Also included are brief courses in basic types of rocks, identifying minerals, and geology.

To the authors' credit the get-rich-quick theme, so common in the early days of the uranium boom, is not made a part of this book. They make it clear that it takes a lot of hard work

and know-how to make money in the uranium business. Swanson and Van der Ley have been prospecting for uranium with some success since they were discharged from the service after the last war. Some of the utilitarian hints they give from start to finish could only come from writers who have worked at their subject.

Published by Vantage Press, New York; illustrated; index; 210 pages; \$4.00.



Eighteen-year-old Everett Ruess dreamed of a wild carefree life in the far places of the earth where, unfettered by the petty restrictions of civilization, he could explore the unknown wilderness and paint and write as he roamed.

In 1934 Everett entered the canyon wilderness along the Colorado River, searching for the "beauty beyond all power to convey" that he knew awaited him in the colorful desert land.

He never returned from that trip.

His burros and pack saddles were found by searching parties three months later—but no clue has ever disclosed the fate of this young artist-explorer.

From that fateful journey and earlier treks has come a compilation of his letters, stories, wood cuts, drawings and photographs, first published by Desert Magazine Press in 1940, but as vivid and alive with the wonder and enthusiasm of youth today as they were in 1934—and as they will be in 1994—

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Gallup Indian Ceremonial August 8-11

OVER 500 INDIAN dancers in traditional costume and paint are expected to participate in the 36th Annual Inter-Tribal Indian Ceremonial at Gallup, New Mexico, August 8-11. The colorful panorama of Indian culture will include four evenings of Indian dances in the light of six huge campfires; three afternoons of all-Indian sports, rodeo and field events; and three morning parades.

In addition, the large Exhibit Hall containing Indian arts and crafts, will be open for the four days of the Ceremonial. Several sessions of a Ceremonial Seminar on Indian problems also are planned.

Ceremonial officials believe 20 tribes will be represented among the Indian participants, including those from the Pueblos of New Mexico and Arizona, the Navajos and Apaches of the Southwest, the Kiowas and Cheyennes of Oklahoma, and the Yakimas of Washington.

All seats are reserved for all performances and tickets can be obtained before arrival at Gallup by writing to the Ceremonial Ticket Office, P. O. Box 1029 Dept. D-7, Gallup, New Mexico. Tickets also are on sale Ceremonial Week at the Ceremonial Hogan or Grandstand box office.

Gallup has 10 hotels and 36 motels, and rooms will be made available in private homes and dormitory facilities are set up in public buildings to handle the Ceremonial crowds. The Ceremonial Housing Committee, same address as above, handles room reservations. Many campgrounds are located in the Gallup vicinity.

The local Boy Scout organization has made arrangements to provide older Scouts and Scout leaders to guide individuals on tours through the area. Of added interest to this year's Ceremonial will be the visits to the site of the \$9,000,000 American Indian Memorial, six miles east of the city. First ground recently was broken on the project.

Photographers are reminded that special permits are needed in order to take pictures at the Ceremonial.

A Zuni Turkey Dancer. The Zuni Pueblo is only a few miles south of Gallup.